JANUARY
1956

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5300 Kc.	7018 Kc.	7068 Kc.	7162.5 Kc.	10.530 Mc.
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VK2WI: Sundays, 1100 hours EST, 7146 Kc. and 2000 hours EST 50 and 144 Mc. No frequency checks available from VK2WI. Intrastate working frequency, 7125 Kc.

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VK4WI: Sundays, 0900 hours EST, simultaneously on 3560 and 14342 Kc. 3560 Kc. channel is used from 0915 hours to 1015 hours each Sunday for the W.I.A. Country hook-up. No frequency checks available.

VK5WI: Sundays, 1000 hours SAST, on 7146 Kc. Frequency checks are given by VK5MD and VK5WI by arrangements on all bands to 50 Mc.

VK6WI: Sundays, 0930 hours WAST, on 7146 Kc. No frequency checks available.

VK7WI: Sundays, at 1000 hours EST, on 7146 Kc and 146.5 Mc. No frequency checks are available.

VK9WI: Sundays, 1000 hours EST, simultaneously on 3.5, 7, 14 and 144 Mc. Individual frequency checks of Amateur Stations given when VK9WI is on the air.

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EDITORIAL

★

DEMOCRACY AT ITS BEST

On the 22nd February, 1857, in London was born a man whose name was destined to become famous both in the military sphere and in every remote part of the globe where mankind lived and flourished. His name was Robert Stephenson Smyth Baden-Powell, better known perhaps under his several nicknames of Ste. (a contraction of his second Christian name, Stephenson, and used mostly by his family); dear old Bathing Towel to his school pals; He of the Big Hat to the Ashanti campaigners; the Wolf that Never Sleeps to his African enemies, the Matabele; and to the world at large as plain but familiar "B-P".

Lord Baden-Powell, as he afterwards became, was a man with outstanding courage, vision and tenacity of purpose. History records details of his Defence of Mafeking during the Boer War in 1899-1900 as one of the outstanding military achievements of all time, yet he was to go on to far greater achievement in completing one of the masterpieces of International organisation—the Boy Scout Movement—a Movement to which he initially gave his spare time and later in life all his time.

Today, despite bitter wars between Nations, the Boy Scout Movement has continued to flourish and expand, carrying on his great teaching—"**To train our future men to be level headed, to give fair play to all, to be unselfish, manly and responsible beings**". In those few simple words lies a challenge to youth which has been taken up and perpetuated through four generations and will no doubt continue unto eternity.

"Be prepared," he said, and these words became the Scout's Motto. "Train your Scouts as individuals and then harness that individuality for the good of the whole" was his great democratic aim, and to this end he gave his all until his passing on the 8th January, 1941.

In our modern scientific age signalling from the simplest form with lamps or flags to the more complex telegraphic and telephonic systems is one of the primary interests and pursuits of the Boy Scouts. In many countries various Boy Scout Branches have Amateur Radio Transmitting Stations as part of the Scout training in signals. This not only brings the Boy Scout Movement to the forefront in signalling facilities, but proves a worthwhile training ground for those who ultimately choose the radio and electronic field with its wide ramifications as their profession in life. This country will want more and more young people to become interested in the science of radio transmission and reception in its many forms as the population increases and the requirements for technical services in this sphere become greater and greater.

To this end the Wireless Institute of Australia has installed a complete Amateur transmitting and receiving station at the site of the Pan-Pacific Jamboree being held at Clifford Park, Victoria, from 28th December, 1955, to 9th January, 1956, where 16,000 Boy Scouts from the Commonwealth and overseas countries are encamped for one of the greatest Jamborees of all time—a tribute to the great founder of the Movement who lived to see it grow from its inauguration

(Continued on Page 14)

THE CONTENTS

Pi Network Tank Circuit

BY K. M. SAXON,* VK7AI

UNTIL recently, the pi network has had little use in Amateur built transmitters, probably because of the difficulties associated with its use in triode amplifiers. But with the trend towards single ended tetrode amplifiers, due in no small measure to the advent of television with its associate t.v.i. of the harmonic variety, the pi network has much to offer from a harmonic reduction point of view, besides affording a simple method of band changing which makes a completely shielded enclosure a relatively simple matter, as access doors do not have to be provided for coil changing. Thus the operator runs no risk of self elimination if he forgets to turn off the high voltage when changing bands.

The main purpose of this article is to describe the writer's final amplifier which uses a pi network. But before doing so, a discussion of the theory of the pi network is desirable.

THEORY OF THE PI NETWORK

The pi network is by no means a new idea. Its main use has been in aerial coupling devices, with some use as a tank circuit in pre-war Amateur portable equipment, etc. It was used in at least one pre-war 5 kw. broadcast transmitter, where its harmonic attenuating abilities were stressed.

At first sight, a circuit diagram using a pi network may appear complex, but it is by no means mysterious to understand.

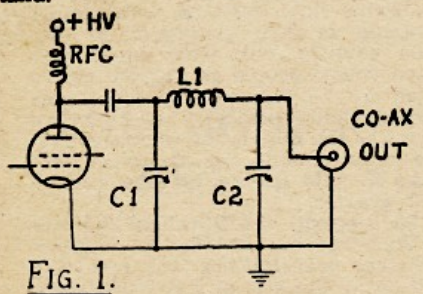

FIG. 1.

The circuit of Fig. 1 shows the network as used as a tank circuit.

C1 and L1 form the tuned circuit elements in much the same way as in a parallel tuned circuit, with the load appearing as a pure resistance across C2.

The loading on the tube is determined by L1 and C2, C1 being used to maintain the circuit at resonance when either of the other two elements is varied. Ideally, both L1 and C2 should be continuously variable as this permits adjusting the load on the tube while maintaining a desired value of Q. For a given Q, C1 would have the same value as in a conventional tank circuit and its value may be determined in the usual way.

If the load connected to the output in Fig. 1 is a pure resistance of known value, a fixed value for either L1 or C2 can be predetermined and the d.c. tube input then adjusted to the desired figure by varying only one of these two circuit elements. C1 must be variable, of course, to maintain resonance.

If L1 is variable and C2 fixed, the optimum capacity of C2 is such that its reactance is equal to the resistance of the load connected to the output. It happens that when the load resistance is low, of an order of 50-70 ohms as normally used with co-axial cables, this value of capacity at C2 is just about right for maintaining the circuit Q within a reasonable range with most transmitting tubes, particularly those having an estimated plate load impedance of 5,000 ohms.

In actual amplifiers, where the Q may be higher, or with large tubes operated at reduced plate voltage, or two small tubes in parallel, with consequent lowered tube load impedance, the reactance at C2 may be considerably less than the nominal load impedance. Also, if the load is not a pure resistance, C2 has to be adjusted to cancel out the reactance. This may occur with a co-ax link at an aerial coupler unless the coupler correctly matches the link to the aerial.

Sometimes L1 is switched, by means of tappings, to each band and C2 is a continuously variable loading adjustment. This varies the Q of the circuit but is not objectionable, provided the tuning range is the same as is the case with the Amateur bands.

The value of C2 which will provide a given degree of loading on the amplifier depends on several factors. The lower the co-ax output impedance, or the higher the Q of the circuit, the greater the capacitance required. Also, the higher the load impedance of the tube (given roughly by $500 \frac{Eb}{Ibma}$), the smaller the capacitance needed. Typical values of all elements for different bands and tube impedance are given in the accompanying tables. For example, a single 807 with a plate voltage of 600v. at a current of 100 Ma., would have an estimated load impedance of 3,000 ohms. At 7 Mc. C1 = 90 pF., L1 = 6.2 uH., and C2 = 700 pF. For 72 ohm output C2 would be slightly lower.

As in any amplifier to be operated at the higher frequencies, every effort must be made to reduce stray capacitances to a minimum, particularly those in parallel with C1.

Tube output and stray capacitances, plus the variable condenser's own minimum capacitance, add up to a considerable total, making it difficult to keep the circuit Q below 20 or more on 28 Mc. This will reduce the efficiency of the circuit due to heating of the coil, even though the actual tube efficiency may be as high as on the lower frequencies.

Whilst a pi network has very good harmonic attenuation, it will pass frequencies lower than the funadmental with greater ease than a conventional tank. **Therefore, the p.a. should not be run as a doubler, nor should it be driven by a doubler unless link coupling is used with two tuned circuits. Also, an aerial coupler is desirable.**

One major difficulty is the r.f. choke needed for parallel feed. This must present high impedance on all bands,

TYPICAL OPERATING CONDITIONS AND COMPONENTS FOR PI COUPLED AMPLIFIERS

	Band	Par. 807s	Single 807		813	2E26
Estimated Plate Load (Ohms)		1,500	2,500	3,000	3,200	4,000
Plate Voltage		600	500	600	800	400
Plate Ma.		200	100	100	125	50
C1 in pF.	3.5	360	210	180	160	135
includes	7.0	180	105	90	50	70
strays	14.0	90	52	45	40	35
(Q = 12)	21.0	60	35	31	28	24
	28.0	45	26	23	20	18
L in uH.	3.5	6.5	10.5	12.5	14.0	15.0
	7.0	3.3	5.3	6.3	7.0	7.8
	14.0	1.5	2.6	3.1	3.5	4.0
	21.0	1.0	1.8	2.0	2.4	2.7
	28.0	0.8	1.3	1.5	1.7	2.0
C2 in pF.	3.5	2.100	1.500	1.400	1,250	1,100
for	7.0	1,050	750	700	630	560
50 Ohm	14.0	540	380	350	310	280
Output	21.0	350	250	230	210	190
	28.0	270	190	175	160	140

All values approximate.

Estimated plate load impedance in ohms = $500 \times \frac{\text{Plate Voltage}}{\text{Plate Current in Ma.}}$

* C/o. Clifton Private Bag, Somerset, Tasmania.

without any series resonances near the bands. A suitable choke is described in the components' list of the transmitter and also in "QST" of May, 1954.

CIRCUIT OF THE TRANSMITTER

The grid circuit employs a multi-band tuner similar to that described in "A.R." for October, 1953. This was found to work as well as a switched or plug-in coil system. The drive is reasonably constant on all bands, being lowest on 14 Mc. where the circuit Q is highest. An 807 operated with about 450v. on its plate can easily supply the required grid drive, even when operated as a doubler. The coupling link should be as short as possible to avoid resonance effects in the link coils which produce heating of the link windings and co-axial cable. As tuning is fairly critical, a vernier dial is recommended.

The tube used is a type 828, though an 813 could easily be substituted, being slightly different physically and requiring no suppressor voltage. Often, an 813 is stable in this circuit, but if necessary, can be easily neutralised as shown by dotted lines in Fig. 2 and described in the A.R.R.L. Handbook.

Neutralisation should not be necessary with an 828, but if it is, proceed as for the 813.

The main tank coil L5 is wound on a 2½" diameter Eddystone ceramic former and is tapped for the various bands. A separate small coil, L4, is used for 28 Mc. This is desirable as it is more readily adjusted to obtain the inductance required for tuning to 30 Mc. with C12 at minimum capacitance. Also, it avoids placing the input capacitance of L5 across C12. (This is even more important when a rotary inductance such as those used in the Command series of transmitters, or the aerial inductance from a BC375 is used for L5.) In addition, L4 can be wound with heavy wire or tubing, which is advantageous considering the higher Q which is unavoidable on 28 Mc.

The coupling condenser C10, and also C11, are 0.0004 uF. units from a BC375 tuning unit (two condensers in each unit). The value of these condensers should not be more than 0.0005-0.001 uF. if the amplifier is to be modulated.

C14 is a standard three section ceramic insulated A.W.A. tuning gang with all sections connected in parallel. C13 is only needed on 3.5 Mc., but should be able to carry considerable current. Four 250 pF. mica condensers in parallel should be satisfactory, or a suitable condenser found in disposals, such as the one rated at 5 amperes at 3 Mc. used in this transmitter.

S1 is a large ceramic job, also from a tuning unit. A standard Oak switch should be satisfactory if both sections are wired in parallel and it is not rotated when the high voltage is turned on.

C12 presents a problem. One section of a Calstan 120 pF. split-stator condenser was used, but it is rather bulky. The p.a. tuning condenser from a TU6 tuning unit should do as its capacitance is 116 pF.

LAYOUT

The amplifier is built on a standard 12" x 17" x 3" chassis with a 12" panel. The grid circuit is enclosed in an 8" x 5" x 3½" aluminium box on the right of the chassis, with M1 above it. The p.a. tuning condenser, C12, is mounted centrally, directly below the plate meter M2. C14 is mounted at the left, its control dial balancing with that of C1, C2, and S1 is mounted so that it will balance as nearly as possible with the grid meter.

The tube is mounted between the grid enclosure and C12. The 828 needs a cylindrical metal shield about 2" high around its base. Modern practice is to mount the tube socket about an inch above the chassis by means of small pillars. The various by-pass condensers are then connected between the socket pins and lugs mounted on the top of the chassis, with practically zero length leads. This reduces lead inductance to a minimum and keeps all r.f. currents within the plate tank enclosure.

L5 is mounted vertically between C12 and C14, with L4 spanning the gap between C12 and L5. The plate choke, RFC2, is mounted behind C12 and should be kept from metal surfaces in all directions. Keep all earth leads short and r.f. leads as short and heavy as possible. Copper strip ¼" wide is preferable.

Shielded wire is used for d.c. and heater leads, a piece of co-ax being used for the high voltage. T1 can be mounted under the chassis if it is three inches or less in one direction, otherwise it can be placed at the rear of the chassis where it will require a perforated shield around it. V2 is placed to the rear of the grid compartment, in such a position that it does not obstruct J1.

RFC4 is included as a precautionary measure, to prevent the high voltage appearing on the output circuit in the event of the failure of C10.

TUNING

Initial tuning should be done with reduced voltage. First, tune the grid circuit to obtain about 10 Ma. grid current. It is desirable to check the tuning with a wavemeter and mark each band, but it is practically impossible to tune the wrong band. Next, with C14 at maximum capacitance, C12 is tuned to the resonance dip. If a co-axial line to the aerial is used, C14 is then decreased in capacitance until the desired d.c. input is obtained, maintaining resonance with C12.

If a short co-ax line is used to the aerial coupler, commence as above, and when C12 is resonated, tune the coupler to resonance as indicated by the feeder current or by a rise in the plate current, then adjust the loading by means of C14 as before, checking the coupler tuning a couple of times and keeping C12 resonated.

When a long co-ax line is used to the coupler, it should be accurately matched as per A.R.R.L. Handbook.

Tuning the aerial coupler through resonance should cause the p.a. plate current to rise to a peak then drop away on the other side. If it does not, or if the current should rise when the coupler is detuned, it means that the co-ax line is not matched and adjustment of the number of turns on the link (or its position if a variable link),

(Continued on Page 5)

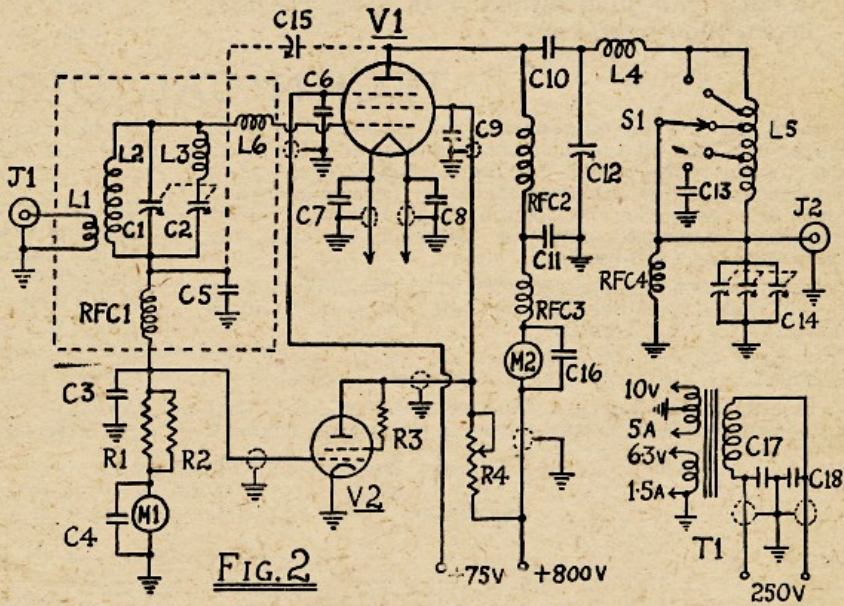

FIG. 2

C1, C2—140 pF. microdensers (ganged).
C3, C6, C7, C8—0.01 uF. mica.
C4, C16—0.002 uF. mica.
C5—500 pF. (or 0.01 uF. if C15 not used).
C9—0.001 uF. 1,000 volt mica.
C10, C11—0.0005 uF. 2,500 volt mica.
C12—150 pF. 3,000 volts (see text).
C13—0.001 uF. mica (see text).
C14—3 section A.W.A. ceramic tuning gang.
C15—2-10 pF. neutralising condenser, 5,000 volt.
C17, C18—0.005 uF. mica.
R1, R2—30,000 ohms 2 watt.
R3—47 ohms 1 watt.
R4—30,000 ohms 50 watt, adjust. wire wound.
RFC1, RFC4—2.5 mH. r.f. chokes.
RFC2—115 turns No. 26 gauge enamelled wire, 3½ inches long wound on 1 inch diam. polystyrene rod 6 inches long (see Ref. No. 5).
RFC3—1.25 mH. 250 Ma. r.f. choke.

M1—0-50 Ma.
M2—0-250 Ma.
T1—Filament transformer, 10v. at 5 amp.; 6.3v. at 1.5 amp.
S1—1 pole 5 position ceramic rotary (from BC375 tuning unit).
L1—3 turns wound over cold end of L2.
L2—15 turns No. 20, 1 inch long, 1¼ inch diam.
L3—8 turns No. 16, 1 inch long, 1¼ inch diam.
Note.—L2 and L3 are mounted at right angles to each other.
L4—5 turns No. 10, 1½ inch diam., 1¾ inch long.
L5—24 turns No. 14, 2½ inch diam. wound 7½ turns per inch on Eddystone ceramic former. Tapped at two, four and eleven turns from plate end.
L6—12 turns 5/16 inch diam., 1 inch long.
V1—828 (or 813).
V2—6L6 or 6Y6G.

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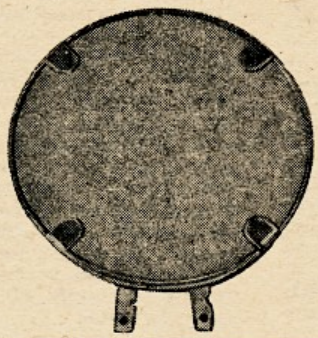

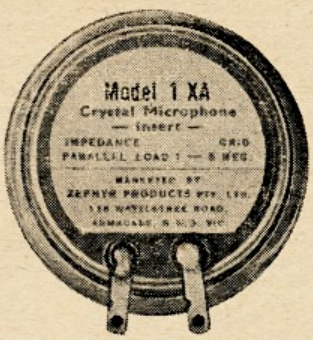

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TECHNICAL DETAILS

Rochelle salt crystal microphones are perhaps the most widely used for all types of service where quality speech and music reproduction at high output levels is a requirement. They are dependable in performance and when fitted with the appropriate "Zephyrfil" filter, their frequency response may be adjusted to suit any application or requirement.

This crystal microphone requires to be terminated with a high value parallel load of the order of 1 to 5 megohms for best results.

The mass of the moving parts is small, hence the sensitivity is high and a high efficiency is achieved.

Light gauge solder lugs are provided so that excessive heat in soldering will not be transmitted to the crystal element.

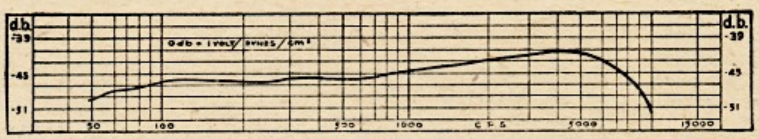
When mounted in a microphone cage, it is recommended that the insert be suspended in rubber, to eliminate shock and vibration.

One of the connecting lugs is directly connected to the case and care should be taken to solder the metal shield of the microphone cable to this solder lug, keeping the unscreened portion of the centre conductor as short as possible to eliminate hum pick-up.

All crystal elements are mounted on high grade suspension pillars, being fixed thereto with a good quality cement, thus ensuring stability and long life.

Case 1½" diameter (rear), ⅜" thickness, 1-13/16" overall diameter (front) with filter fitted.

Frequency Response = 60-6,500 c.p.s.
Output Level = —45 db (0 db = 1 volt/dyne/cm²)
Impedance = Model 1XA Grid 1 — 5 megohms.



Approximate Frequency Response Curve

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A Transmitter With Low Harmonic Output

PART FOUR **BY HANS RUCKERT,* VK2AOU**

POWER SUPPLIES

Fig. 5: After passing a shielded mains filter with four button-type 2,000 pF. feed through ceramic capacitors and a pair of single layer chokes, the mains voltage reaches four different power supplies. Immediately after switching on the power supplies shown in Fig. 5, the regulated bias voltage is present due to the selenium rectifier used here.

Since the regulator Stabilovolt 40 Ma. 4 x 70v. keeps the current constant, there was a handy way to get the supply for the stand-by relay (RX-TX relay). The other power supply switches all the filaments on, including those of the high voltage rectifier valves. We see again a voltage regulator for 80 Ma. and 4 x 70v.

Note the two current regulators EW and H. They are made of iron wire in a hydrogen atmosphere. One regulates the v.f.o. filament current of 0.7 amp. within 8-24 volts, and the other one keeps the current to the STV280V/80 Ma. constant over a voltage range of 85-225v.

Parallel to the electrolytic capacitors, which are in series, we have to place resistors which have a higher current going through than the leakage current through the capacitors, or we would overload the better one of the two and soon both would blow up.

Figure 6: Two further power supplies are shown on this drawing. We see again fuses on the primary as well as on the secondary side of each power supply, because these are cheaper than replacing burnt out transformers and rectifiers.

The same high voltage power supply is used for the p.a. and modulator final. The 2 x 800v. transformer is capable of 250 Ma. at 800v. d.c. if the mains voltage is not too far down. This is just enough to modulate the 100 watt input carrier to 95% on speech peaks. Running the final with more input would cause negative modulation because the power supply can't stand so much load.

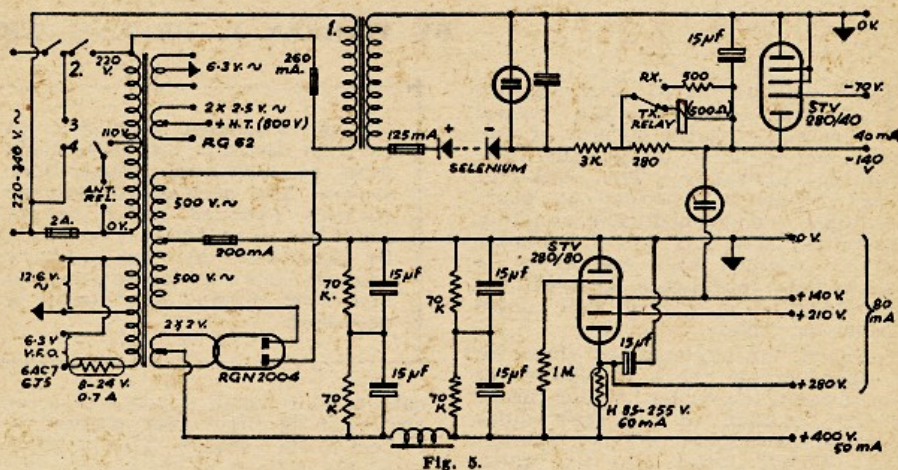

Fig. 5.

The swinging choke was home-made out of an old vibrator transformer by widening the gap at the lamination and rewinding. The output voltage does not vary more than 5% with a load change of 120 to 250 Ma.

The hum filter uses two very small chokes which are tuned with 2 uF. capacitors to the 100 c.p.s. hum frequency.

GENERAL COMMENTS

Re-building of the transmitter last year took two weeks of my holidays to do the mechanical work and many more week-ends for wiring and aligning, plus even more time for special tests of interest.

In spite of poor DX conditions, 350 DX contacts have been enough to work 60 DX countries. The CQ to QSO ratio improved quite a lot, paying off for the effort.

With the receiver in the back yard and reduced sensitivity, the ratio between the fundamental on 14 Mc. and harmonics on 28 and 42 Mc. is as good as 100,000 to 1, and this without the mains and antenna low-pass filter. The old transmitter was not better than 100 or 1,000 to 1.

This description and construction is by no means the only way to solve t.v.i. problems at the transmitter, but it includes many points which seem to be the logical answers and the writer followed often the methods outlined in "QST" and other publications. Not a penny was spent to re-build the transmitter, all the components were already in the old transmitter or could be found among the bits and pieces one collects after being an Amateur for 25 years.

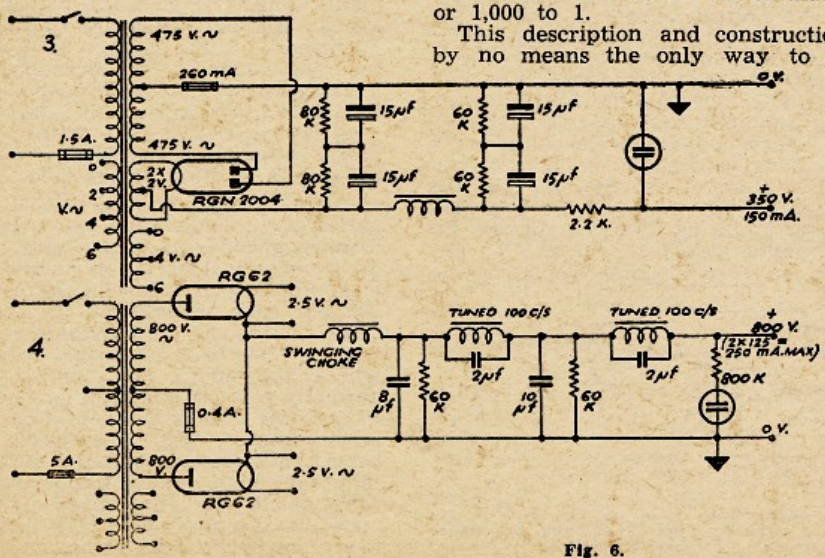

Fig. 6.

*25 Berrille Road, Beverly Hills, N.S.W.

PI NETWORK TANK CIRCUIT

(Continued from Page 3)

will probably put matters right. When properly adjusted, it is possible to disconnect the co-ax at J2 without detuning C12 by more than a degree of rotation. The loading can be varied by C14 over a reasonable range without materially affecting the setting of C12, when working into a purely resistive load, after the manner of a variable link in a conventional tank circuit.

The efficiency of the pi network does not suffer by using a tapped or variable inductance (unless the unused portion is self resonant at the operating frequency). No heating of the coil when wound with 18 gauge wire was apparent, even with 100w. input, except a little on 28 Mc. where the Q is higher. Even here it was no greater than when previously using plug-in coils.

I have endeavoured to cover the subject as simply and fully as necessary to ensure a reasonable working knowledge of the circuit. Any queries which may arise, I would be glad to answer, within my capabilities, and I hope that greater interest may be aroused in Australia in a circuit which has become extremely popular overseas.

REFERENCES

(1) "Practical Applications of Pi Network Tank Circuits." Grammer, "QST," Jan., 1952.
(2) "Pi Network Design Curves." Grammer, "QST," April, 1952.
(3) "Pi Network Tank Circuits for High Power." Grammer, "QST," Oct., 1952.
(4) "High Power Pi Network Amplifier with Parallel Tetrodes." Bridges, "QST," May, 1954.
(5) "R.F. Chokes for High Power Parallel Feed." Chambers, "QST," May, 1954.

High-Level Clipping and Filtering*

New Light on Clipper-Filter Behaviour

BY WARREN B. BRUENE, W0TTK

● This discussion spotlights an inherent defect in the series-diode type of high-level clipper-filter system. The peculiar oscilloscope patterns obtained under certain conditions of modulation are readily explained by the author's analysis, and a better approach to high-level clipping and filtering is described.

HIGH-LEVEL filtering and "splatter filters" came into use several years ago for the purpose of preventing the radiation of spurious high-frequency sidebands. The high-frequency sidebands generated by overmodulating a plate-modulated amplifier were particularly bad, and the splatter filter[1, 2, 3] resulted from the effort to attain a high modulation level without transmitting the splatter so well known in Amateur circles.

However, the explanations given for the operation of these circuits never quite satisfied the writer. While checking the function of the series-diode negative-peak limiter in the "splatter filter," W0JET found that the transmitted bandwidth was less in his transmitter with the diode removed, and he advanced a theory for the reason why. The writer investigated this theory and studied the general problem of high-level clipping and filtering. It is hoped that the following discussion will clear up much of the misunderstanding regarding the operation of splatter filters[4] and indicate better methods of attaining the desired results.

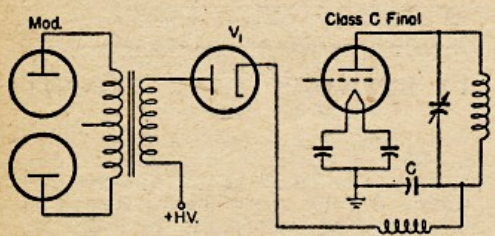

Fig. 1.—Series-diode negative peak limiter or "splatter preventer."

Now let's get to the heart of our subject and examine Fig. 1. This shows a plate-modulated Class C final with a diode in series with the high-voltage supply to the Class C plate circuit. This is the conventional splatter filter circuit with the filter left out. The Class C final tube looks like a pure resistive load to any positive plate voltage. With V1 in the circuit the modulated plate voltage cannot swing the plate voltage negative, so for our analysis we can replace the Class C final amplifier with a resistance as shown in Fig. 2. The other important element of the circuit is the capacitance of the Class C final plate feed to ground. Most of this capacitance is contributed by the plate tank-to-ground by-pass condenser.

Now we can inspect Fig. 2 and see how it performs. First let us note that the diode V1 conducts only when its plate is positive with respect to the cathode and that it appears as an open circuit if its plate gets negative with respect to the cathode. This means that when the voltage at the top end of the modulaion transformer secondary, terminal P, swings higher, the diode V1 conducts and the voltage across R (the Class C final) and C will follow the voltage at terminal P. It will actually be just a few volts less due to drop across V1, but this is not significant.

Now, for the purpose of analysis, let the voltage at P swing down to zero instantly. Diode V1 looks like an open circuit because the charge on capacitor C keeps some positive voltage on the cathode of V1 although its plate is at zero potential. Capacitor C discharges through R and the voltage across R (the plate voltage on the Class C final) decays in the usual exponential manner as shown in Fig. 3A. The envelope of the r.f. output for this example is shown in Fig. 3B. If the capacitance of C is increased or the resistance of R increased, the voltage will drop down at a slower rate. The product RC is known as the time constant of the circuit and this defines the rate of voltage decay.

FREQUENCY EFFECTS

With this background let's see what happens with sine-wave audio modulation. When the audio frequency is very low, the voltage across R follows the voltage at point P over the entire cycle, because the downward voltage swing is so slow that C can discharge fast enough to keep from affecting the voltage across R. As the audio frequency is increased, a frequency is reached where the slope of the downward audio swing is steeper than the slope of the first part of the exponential curve shown in Fig. 3A. This shows up as diagonal clipping on the negative peaks, and it can be observed on an oscilloscope displaying the r.f. envelope. As the audio frequency is increased, the voltage at terminal P and the voltage on the Class C final changes as shown in Fig. 4 at A, B and C for three different audio frequencies. The corresponding 'scope patterns are shown in Fig. 4 at D, E and F.

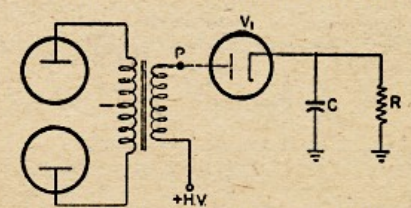

Fig. 2.—Equivalent circuit of Fig. 1, with resistor R replacing the modulating impedance of the Class C amplifier.

By examining the diagrams in Fig. 4 we can explain a couple of other things that happen with high audio frequency modulation. In Fig. 4B, for example, it is noted that the average plate voltage is higher than the power-supply voltage. Higher average voltage means higher plate current to the Class C final, and this partly explains why the plate current kicks up with modulation when a splatter filter is used. When a steady sine wave is applied as in Fig. 4B, the actual carrier power is increased by the square of the increase in average plate voltage. Fig. 4B is repeated in Fig. 5 with the dashed line showing the average d.c. plate voltage on the final for this condition of operation. This increased average plate voltage and corresponding carrier power is called "positive carrier shift." The extra carrier power comes from the Class B modulator and is rectified by the diode V1.

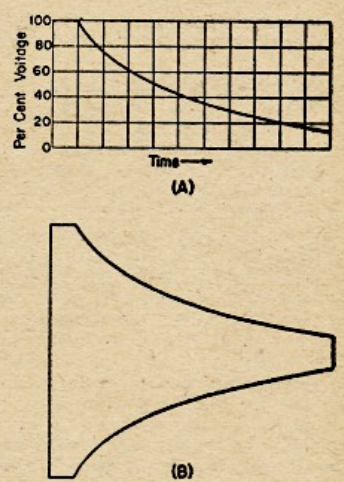

Fig. 3.—(A) Behaviour of d.c. plate voltage on Class C amplifier when the plate-supply voltage is suddenly reduced to zero. (B) Corresponding oscilloscope pattern of r.f. envelope.

Another thing to notice is that the percentage modulation goes down with increasing audio frequency even though the audio signal on the modulator grids is maintained at the same level giving 100 per cent. modulation if diode V1 were shorted out. (It should be noted that we have been discussing conditions where the audio input level would normally give 100 per cent. modulation.) With lower audio signal levels the above results become less pronounced. This circuit thus acts somewhat as a filter in that the high audio frequencies are "attenuated," but this attenuation depends upon amplitude and is less with lower-amplitude audio tones.

---

* Reprinted from "QST," November, 1951.

1—W. W. Smith, "An Effective Splatter Suppressor," "Radio," October, 1940.
2—Thordarson Splatter Chokes and operating instructions.
3—Chicago Transformer Splatter Chokes and operating instructions.
4—Howard W. Johnson, "Self-Filtered Peak Clipping," "QST," April, 1948.

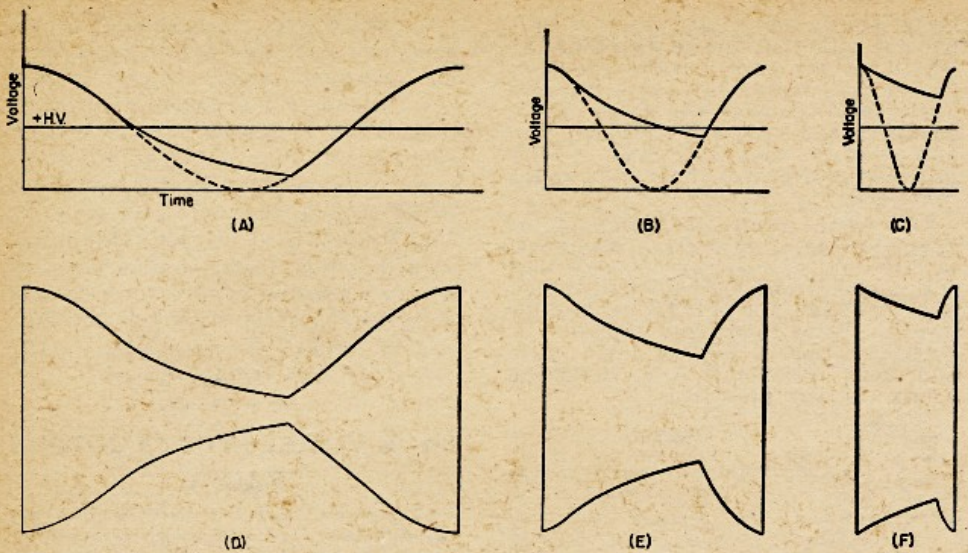

Fig. 4.—Instantaneous voltage, shown by solid curves in A, B, and C, at the plate of the Class C amplifier at various modulation frequencies when the series diode is used. A—moderately low frequency; B—moderately high frequency; C—very high frequency. The corresponding oscilloscope patterns of the r.f. envelope are shown at D, E, and F.

Fig. 6 shows this carrier shift due to rectification and the "attenuation" in the form of reduced modulation in an actual test case. The carrier shift and per cent. modulation drop will start at correspondingly higher audio frequencies if the 0.007 uF. capacitor is reduced in value or if the Class C load resistance is reduced.

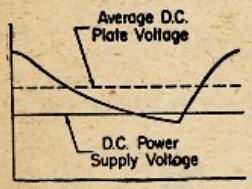

Fig. 5. — Showing how the condition of Fig. 4B results in a change in the average value of d.c. plate voltage, resulting in upward carrier shift.

Incidentally, the writer very carefully checked to see if it made any difference when the diode V1 was placed on the bottom side of the modulation transformer between the Class C final power supply and the modulation transformer secondary.[4] The difference was always less than ½ db. and did not favor either way consistently.

The other thing to notice is that the modulation is no longer a sine wave and takes on more of a saw-tooth shape. This waveshape contains harmonics of the fundamental audio tone so that the actual bandwidth of the r.f. signal is much greater. The extra sidebands generated might be called splatter, although they will not be found to extend across the band as far as the ordinary splatter does. But even though the higher audio frequencies are "attenuated," high-order harmonics are generated which spread out the signal.

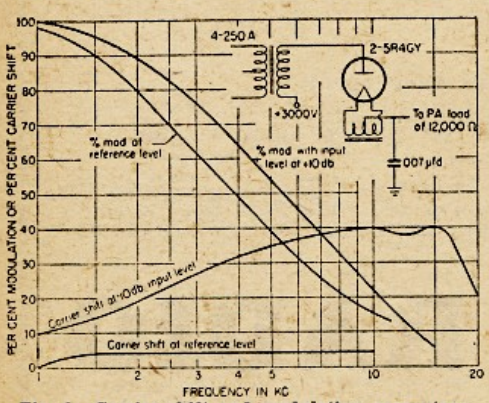

Fig. 6.—Carrier shift and modulation percentage versus modulating frequency in a representative set-up. The curves are referred to the signal-input level, at the grids of the Class B modulators, that gives 100% modulation at 1,000 c.p.s. without the series diode.

WHERE TO CLIP

In Fig. 7 we have added the low-pass filter to give us the regular splatter filter circuit. Instead of just the simple capacitor C we have the whole low-pass filter. Figuring the time constant—or more correctly, the transient characteristics—of the filter with the load R becomes more complex, but the same type of patterns are observed on the 'scope as those shown in Fig. 4. The "time constant" of the filter varies with the value of m used in the filter design. The writer didn't go very deeply into determining the best value of m, but a few tests indicated that some value around 0.8 was best.

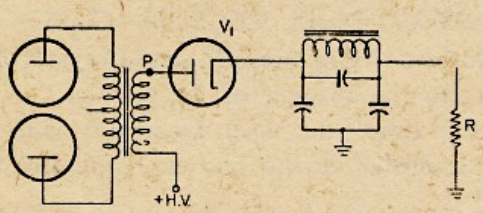

Fig. 7.—Complete splatter filter with series diode and low-pass filter. Resistor R is the modulating impedance of the Class C amplifier.

Now let's try to evaluate the performance of the splatter filter of Fig. 7 compared with the simple high-level filter shown in Fig. 8, which is the same except that the diode is omitted. The splatter filter does reduce splatter to a substantial degree compared with no filter at all, which is attested by its popularity. The writer found in a lab. set-up that using the diode did substantially reduce splatter if the modulators were capable of heavy overmodulation. If their power output capability was only enough to overmodulate the Class C final slightly, it made no difference whether the diode was used or not.

High-powered modulators, when using a splatter filter, will deliver more sideband power but this extra-heavy modulation is principally effective on the lower voice frequencies, which produce most of the audio power. However, the original research on speech clipping showed that much of the intelligibility contained in speech is in the consonant sounds, which are the higher audio frequencies, and that the vowels or lower voice frequencies can be reduced in amplitude several times without impairing intelligibility. Thus, it is better to use a modulator just capable of 100 per cent. modulation, along with some form of **good** speech clipping.

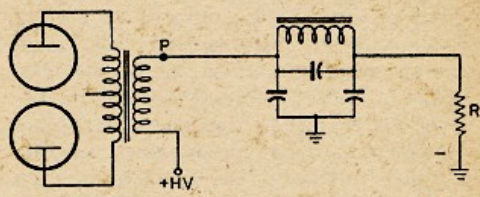

Fig. 8.—Low-pass filter for removing high-frequency components of Class B modulator output and thus preventing splatter. As described in the text, this type of circuit is highly effective when following a Class B modulator adjusted to clip both sides of the wave at or just below the 100% modulation level.

When using the splatter filter the high frequencies, starting from around the cut-off frequency of the filter and going higher, are rectified and cause part of the kicking up of the final plate current meter. However, most of the kicking up is from the heavy modulation of the low frequency positive peaks, which also cause the average d.c. plate voltage to increase on the final. It may be a thrill to see the modulators blush and the meters kick up, but the value in "getting out" better than a good speech clipper is very doubtful. To "get out" better some form of good speech clipping with modulation limited to just under 100 per cent. is a better solution.

One good place to do speech clipping is right in the plates of the Class B modulators.[5] This can be done by raising the plate-to-plate load impedance on the Class B modulators until they are not quite capable of 100 per cent. modulation. This can be readily accomplished if a multitap modulation transformer[6] is used. Another way is to lower the d.c. plate voltage on the Class B modulators (but not the Class C final) until they are just not quite capable of modulating the final 100 per cent. no matter how loudly you yell into the microphone. (Of course. the modulator bias should be reduced also to keep the proper modulator static plate current.) This adjustment should be made with the final loaded in the usual manner or slightly on the light side, because the clipping or plate-overloading level will increase a little in most modulators when the final is loaded more lightly.

Clipping right in the modulator stage reduces the problem of avoiding phase shift of the clipped waves because there

5—Woodrow Smith, "Simplified Speech Clipping," "CQ," May, 1948.
6—Adjustable impedance modulation transformers such as the Multi-match, Varimatch, Poly-Pedance modulation transformers.

is nothing left to shift phase except the modulation transformer and the high-level filter.[7] To avoid unnecessary "tipping" of the top of the clipped wave a modulation transformer with good low-frequency response, along with only one section of filter, is recommended. The filter section should be designed with an m of 0.8 or, perhaps better yet, may be a constant-k or simple pi-section filter shown in Fig. 8 doesn't cut off as sharply as the m-section type, but it gives better attenuation farther out, which is more important.

Incidentally, a heavily-clipped wave approaches a square wave in shape and a modulator capable of 100 watts sine-wave output will deliver nearly 200 watts of square-wave output. This helps explain why a transmitter with good speech clipping carries the punch that it does. This isn't hard on the modulator tubes either because their plate efficiency is much higher when passing a clipped wave, so the plate dissipation is nearly the same with either sine-wave or square-way modulation.

It will be hard on the modulator tubes to run frequency-response tests at 100 per cent. sine-wave modulation up beyond the cut-off frequency of the filter because above cut-off they see essentially just the input capacity of the filter, but with voice modulation they can take it. If you want to make life easier for the modulator tubes, put a low-pass filter[8] up in the front end of the speech amplifier and choose the cut-off frequency of the high-level filter to be a little higher than that of the filter in the front end.

The writer made many tests in the laboratory using all sorts of equipment to test out this theory of high-level clipping and filtering. Also, on-the-air tests at W0JET and W0TTK confirm the theory. Many interesting things were discovered during the tests, but space will only allow the basic discussion which has been presented.

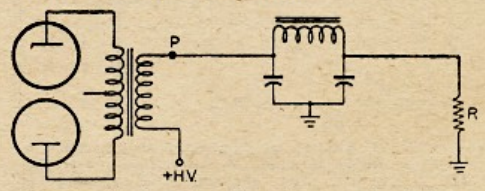

Fig. 9.—Similar to Fig. 8, except that a constant-k filter section replaces the m-derived section of Fig. 8. Formulae for designing both types of sections may be found in The Radio Amateur's Handbook.

In conclusion, the writer wishes to point out again that some good form of speech clipping that clips both the positive and negative audio peaks, followed by a single-section high-level filter, will give about all that can be practically obtained in the way of heavy modulation without splatter.

Careful choice or adjustment of the modulator plate load impedance to limit the modulator power output is well worth while. For example, when using Class B 810s in a 1-kw. transmitter with 2250 to 2500 volts on them, the plate-to-plate impedance should be about 18,000 ohms instead of 12,000 ohms, to limit the sine-wave output to 500 watts. In addition to better perfomance, this system is more economical since the cost of several parts is saved and the high voltage peaks on the Class C tank circuit are kept down to normal.

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All copies are available for the years 1953, 1954, and 1955.

7—It is hoped that the effect of phase shift on clipper-filter performance can be discussed in detail in a subsequent article.

8—Chicago Transformer LPF-1, for example.

Integral Crystal Calibrator for Superhet. Receivers

BY S. J. LLOYD,* VK3AST

A BUILT-IN Crystal Calibrator is a useful addition to any communication receiver, but the use of an extra tube for this purpose alone is not always economically possible. In a superhet. receiver, however, the beat frequency oscillator, if suitably modified, can be made to provide calibration points by feeding its harmonics back into the mixer stage.

The average receiver b.f.o. is not suitable as it stands, for two reasons: Firstly, the frequency is usually variable over a small range, and even if not deliberately adjustable, is unlikely to be sufficiently accurate for frequency reference; secondly, its nominal frequency is generally inconvenient for calibration purposes, e.g. 455 or 1600 Kc.

The first defect can be remedied by converting the b.f.o. to a crystal oscillator; a fixed beat frequency is no great disadvantage, and the actual note can be set to any desired pitch during alignment. It can still be varied over a small range, within the i.f. passband, by the receiver tuning. The second disadvantage can be overcome by altering the intermediate frequency, and therefore the beat frequency, to the nearest round figure suitable for calibration purposes. In a receiver with a crystal filter, however, new filter crystals would be required, and it would be better to choose the b.f.o. crystal to suit the i.f., accepting the inconvenience of oddly spaced check points.

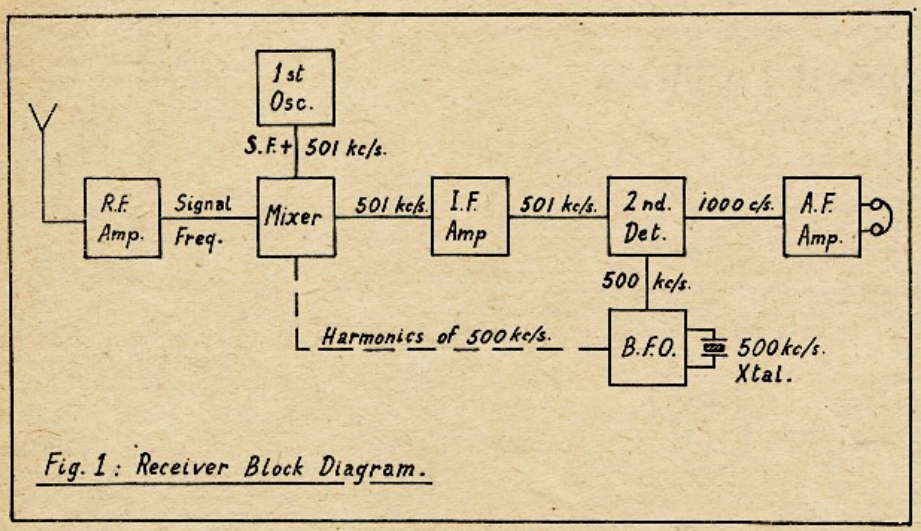

Fig. 1: Receiver Block Diagram.

CHOICE OF I.F.

A receiver intermediate frequency of 455 Kc. can conveniently be altered to 500 Kc. plus or minus the desired audio beat frequency, and an easily obtained 500 Kc. crystal used in the b.f.o.

The crystal fundamental provides the beat note, and the harmonics supply calibration points at intervals of 500 Kc. throughout the tuning range of the receiver.

Similarly, an i.f. of 1600 Kc. can be modified to 1500 Kc., and the third harmonic of a 500 Kc. b.f.o. taken for the beat frequency; in this case a 1500 Kc. crystal could be used in the b.f.o., but the harmonics would be too far apart for accurate calibration.

A double superhet with a second intermediate frequency of the order of 100 Kc. can have a 100 Kc. sub-standard crystal in the b.f.o., giving accurate check points every 100 Kc.

It would also be possible to use such a crystal in receivers with a higher i.f., using the appropriate harmonic (fifth or fifteenth) for the beat frequency; this method has not, however, been tried out, and careful screening would be needed to suppress spurious beats.

I.f. break-through on the altered intermediate frequencies should not be troublesome if a series wavetrap is used, and the screening is adequate.

B.F.O. CIRCUIT

The beat frequency oscillator circuit must be chosen to suit the tube to be used and the activity of the crystal, and should be capable of producing high order harmonics. If the fundamental frequency of the crystal is used for the beat frequency, a tuned circuit is not required; the circuit shown in Fig. 2 has been found suitable for a 500 Kc. crystal and an EF50.

OSCILLATOR INJECTION

The method of coupling the harmonics of the b.f.o. into the mixer stage of the receiver will depend on the design of the latter. Simple capacity coupling to the mixer grid, by a small neutralising condenser, is satisfactory; it may be difficult, however, to get adequate injection of harmonics at the h.f. end of the tuning range without overcoupling at the l.f. end. If a spare wafer is available on the band-change switch, a separate coupling condenser for each band is preferable.

I.F. TRANSFORMERS

The range of adjustment provided in the receiver i.f. transformers is probably insufficient to cover the altered frequency, and some modification is needed. 455 Kc. transformers can be changed to 500 Kc. by removing turns from the windings, whereas 1600 Kc. transformers will need added parallel capacity to lower them to 1500 Kc. A grid-dip oscillator covering the required range simplifies the conversion.

ADJUSTMENT

With the b.f.o. crystal oscillating, its exact frequency is checked against a standard frequency transmission or reliable frequency meter. If it is not exactly on its nominal frequency, some adjustment is possible by such means as adding extra capacity in parallel, or "loading" the crystal. If it is close to the nominal figure, however, it is simpler to calculate a correction factor to be applied when particular accuracy is required.

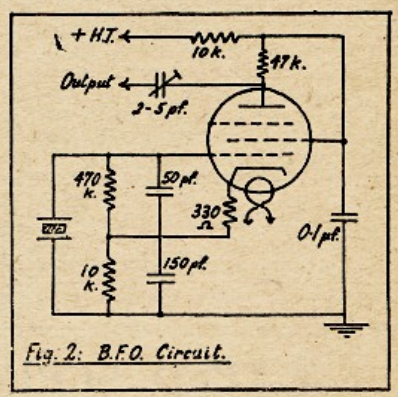

Fig. 2: B.F.O. Circuit.

The i.f. stages are aligned to a frequency that will give the required beat note with the crystal frequency; e.g. for a beat note of 1000 c.p.s. They are peaked at 1 Kc. above or below the b.f.o. The actual note can be varied by the receiver tuning, as long as it is kept within the i.f. passband.

The coupling between the b.f.o. and the mixer is adjusted to give just enough signal strength on calibration points at the h.f. end of the receiver tuning range.

PERFORMANCE

The arrangement here described has been used for some years in a home-built superhet., using a 500 Kc. crystal in the b.f.o. and an i.f. of 501 Kc. No trouble was experienced with i.f. break-through or spurious beats, and useful calibration points were obtained every 500 Kc. throughout the range from 3.5 to 14 Mc.

An incidental advantage of the system is that the receiver first oscillator can be used to provide a calibrated test signal, as its frequency is always exactly 500 Kc. above the reading of the tuning dial.

* "Tullamore," Humphries Road, Frankston, Vic.

THE SLOT BEAM*

BY B. SYKES, G2HCG

Recent developments in Band III. television aerials have led to the combination of the Yagi and skeleton slot aerials. The result has the advantages of both types without the disadvantages of either.

The fundamental problem with the Yagi is the great reduction in feed point impedance when parasitic elements are added to the simple dipole. This means that when tuning up such an array, it is necessary to adjust the matching at the same time as the elements are tuned to length and the spacing altered. This almost always results in a Yagi with the spacing adjusted for optimum matching rather than optimum gain. Further complications arise when attempts are made to stack Yagis and it is frequently found that two perfectly good four element Yagis giving, say, 8.5 db gain each, flatly refuse to give a further 3.5 db when stacked. The problem again is that of impedance matching. A suitable matching system is of necessity somewhat complicated, both electrically and mechanically.

The search for simplicity and wide bandwidth led to further investigations into the operation of the skeleton slot aerial. The results indicated that parasitic reflector and director elements could be used with the skeleton slot aerial. In addition, the bandwidth was greatly increased by the use of a non-frequency sensitive delta-matching system.

Further examination of the operation of the skeleton slot indicates that the centre portions of the vertical sections are simply transmission lines feeding two bent dipoles consisting of the horizontal sections and the ends of the vertical sections. The important point to note is that the dipole can "choose" its own length to suit the operating frequency; in other words, the point at which the vertical sides of the skeleton slot cease to be transmission lines and become the ends of a bent dipole is governed by the **frequency** and not by the **size** of the aerial. There is, of course, a limit, but the bandwidth can be very wide indeed.

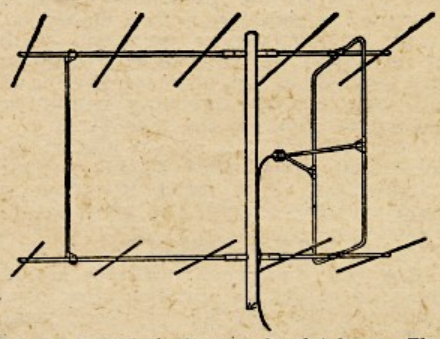

Fig. 1.—A typical six-over-six slot beam. The gain is 13 db over a dipole, the back to front ratio 40 db, and the horizontal beam width 20°.

The skeleton slot, therefore, consists of two stacked end-fed dipoles. The addition of parasitic elements to an end-fed dipole does not alter the feed impedance, but the tuning; i.e., the length of the dipole does alter. Since the dipoles in a skeleton slot array can "choose" their own lengths, it follows that a skeleton slot can be converted into a stacked Yagi with no matching complications. This is confirmed in practice where such an array may be set-up giving a standing wave ratio of 1.2/1 and reflectors and directors added and tuned for maximum field strength, increasing the forward gain by about 10 db. It is then found that the standing wave ratio has not altered. The age-old problem of matching Yagis and stacked Yagis is therefore solved and all elements can be tuned for maximum radiation with no fear of feed-point impedance changes.

* Reprinted from R.S.G.B. Bulletin, Aug., 1955.

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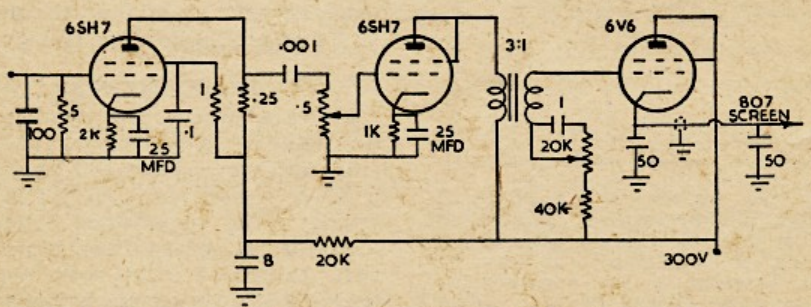
GATED SCREEN MODULATION

BY S. C. BURTON,† VK2AYB

Having experimented with clamper and transformer screen modulation, it was found that adjustments were critical, especially when changing bands. With the gated screen, these troubles disappeared. The writer is at present using this method to screen modulate a pair of 807s in parallel and obtaining very pleasing reports.

The voltage on the final screen is adjusted to 150 volts by the 20,000 ohm potentiometer at the bias end of the transformer secondary. The transformer is an old 3 to 1 interstage job. Audio gain is controlled by the 0.5 meg. potentiometer in the grid of the 6SH7 triode. The circuit diagram and remarks should give a fair indication of operation. Suffice to say it will modulate a pair of 807s 80% to 100% at all times.



The circuit is simple and sure-fire. The only adjustment is that the loading to the final should be increased to give a small upward kick on the plate meter under modulation. This will necessitate, in most cases, heavy coupling to the antenna coupler.

The loading adjustment seems the most critical adjustment, but once set for any band, should not require altering. Grid drive has some effect on output, but is set at 5 Ma. at this station for 60 watts input.

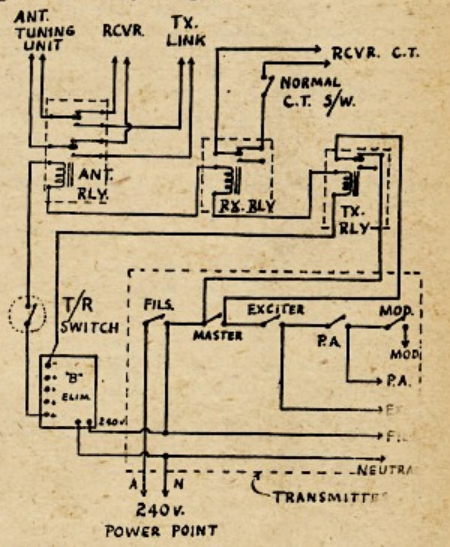
† 52 Arcadia Street, Penshurst, N.S.W.

Single Switch Control

BY H. G. WOHLERS,‡ VK3YV

Making The Old "B" Eliminator Extremely Useful

Many Amateurs today have in their junk pile an old "B" battery eliminator and also several disposals relays of the 24-28 volt high resistance type. These relays can be operated satisfactorily by connecting them in series in banks of 1, 2, 3 or 4 across the output of an old "B" eliminator (tapped type preferable). Sure, it is realised that the regulation of these eliminators is lousy and because of that they are not much good for anything else.



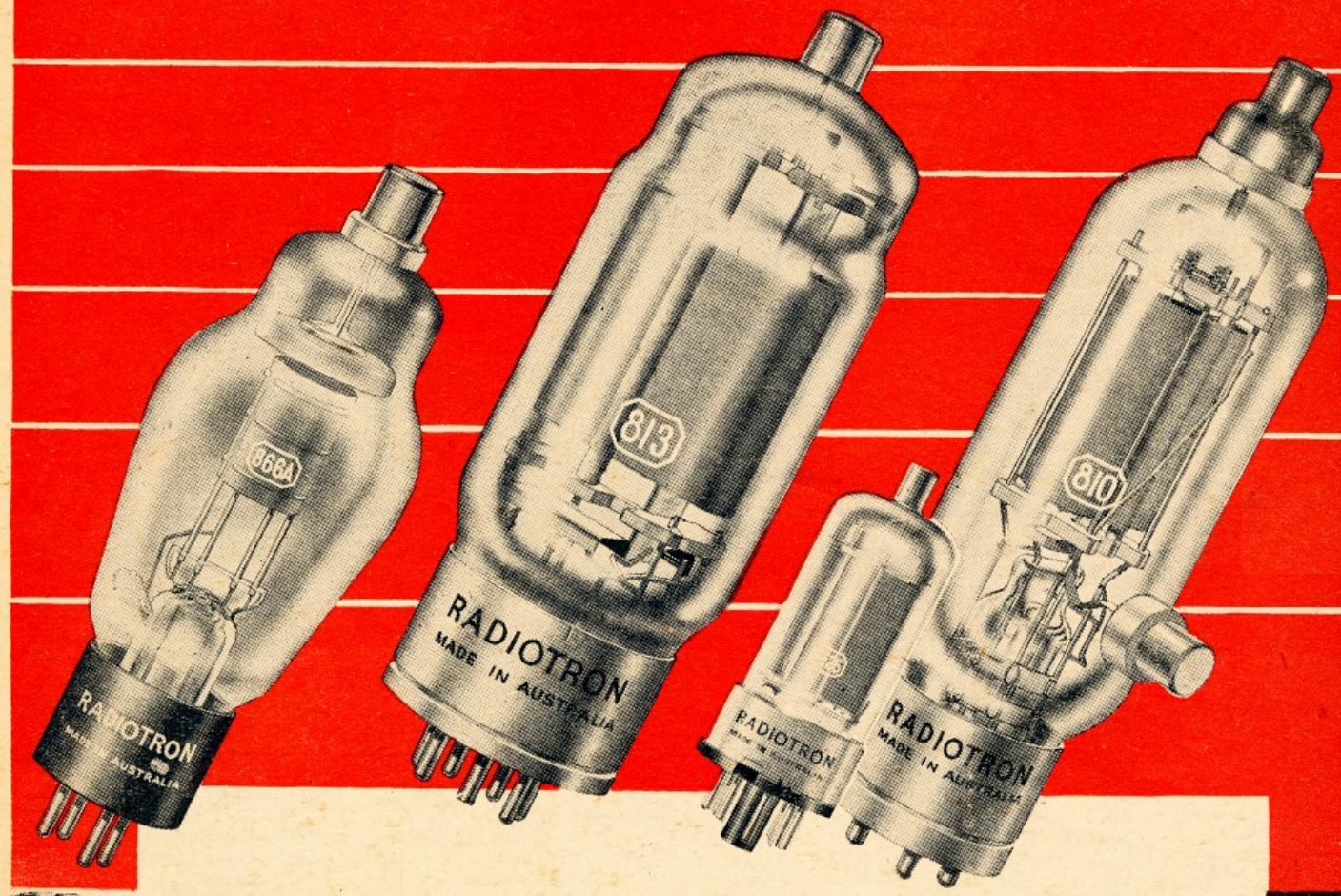
NOTE:-
TO "NET" WITHOUT ANT.
TURN "P.A." S/W OFF.
TURN "MASTER" S/W

The following is a set-up which has been in use in my shack for at least seven years and has never failed yet. It has given every satisfaction and can be varied in a 100 different ways to suit any Amateur's requirements. After hours of use neither the relays nor the eliminator show any signs of warming up and the original rectifier valve is still in use.

Don't worry about voltages and currents as I have used all sorts and types of relays (except low resistance types) with excellent results. In any case, for those who are interested, it is one good way of making use of disposals relays and old eliminators to operate your station with single switch control.

‡ 107 Templeton Street, Wangaratta, Vic.

RADIOTRON POWER VALVES



Today's high standards of radio performance are dependant upon the use of first quality components.

Radiotron valves are manufactured to exacting standards which ensure you of the ultimate in performance at all times.

Be sure of the quality and consistency of your signals by using Radiotron Power Valves.

Important: When ordering valves, be sure to mention "Amateur Radio" so that priority can be given to your order.

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W.I.A. COUNTRIES LIST

Official List for VK DX Contest and the VK DXCC Award

AC3—Sikkim (22)
AC4—Tibet (23)
AP—Pakistan (21, 22)
BV (C3)—Formosa (24)
C (unofficial)—China (23, 24)
C3—See BV.
C9—Manchuria (24)
CE—Chile (12)
CE7Z, LU, VK1, VP8—Antarctica (13, 29, 30)
CE0—Easter Island (12)
CM, CO—Cuba (8)
CN2, KT1—Tangier Zone (33)
CN8—French Morocco (33)
CP—Bolivia (10)
CR4—Cape Verde Is. (35)
CR5—Port. Guinea (35)
CR5—Principe, Sao Thome (36)
CR6—Angola (36)
CR7—Mozambique (37)
CR8—Goa (Port. India) (22)
CR9—Macau (24)
CR10—Port. Timor (28)
CT1—Portugal (14)
CT2—Azores Is. (14)
CT3—Madeira Is. (33)
CX—Uruguay (13)
DJ, DL, DM—Germany (14, 15)
DU—Phillipine Is. (27)
EA—Spain (14)
EA6—Balearic Is. (14)
EA8—Canary Is. (33)
EA9—Ifni (33)
EA9—Rio de Oro (33)
EA9—Span. Morocco (33)
EA0—Span. Guinea (35)
EI—Eire (14)
EL—Liberia (35)
EQ—Iran (21)
ET2—Eritrea (37)
ET3—Ethiopia (37)
F—France (14)
FA—Algeria (33)
FB8—Amsterdam and St. Paul Is. **(39)**
FB8—Kerguelen Is. (39)
FB8—Madagascar (39)
FC—Corsica (15)
FD—Fren. Togoland (35)
FE8—Fr. Cameroons (36)
FF8—Fr. West Africa (35)
FG—Guadeloupe (8)
FI8—Fr. Indo China (26)
FK8—New Caledonia (32)
FL8—Fr. Somaliland (37)
FM—Martinique (8)
FO8—Clipperton Is. (7)
FO8—Fr. Oceania (32)
FP8—St. Pierre & Miquelon Is. (5)
FQ8—Fren. Equatorial Africa (36)
FR7—Reunion Is. (39)
FU8, YJ—New Hebrides (32)
FW8—Wallis and Futuna Is. (32)
FY7—Fr. Guiana and Inini (9)
G—England (14)
GC—Channel Is. (14)
GD—Isle of Man (14)
GI—Northern Ireland (14)
GM—Scotland (14)
GW—Wales (14)
HA—Hungary (15)
HB1, 9—Switzerland (14)
HC—Ecuador (10)
HC8—Galapagos Is. (10)
HE—Liechenstein (14)
HH—Haiti (8)
HI—Domin. Republic (8)
HK—Colombia (9)
HK0—Archipelago of San Andres and Providenciea (9)
HL—Korea (25)
HP—Panama (7)
HR—Honduras (7)
HS—Siam (26)
HV—Vatican City (15)
HZ—Saudi Arabia (21)
I1—Italy (15)
I1—Trieste (15)
I5, MS4—Italian Somaliland (37)
IS1—Sardinia (15)
JA, KA—Japan (25)
JY, ZC7—Jordan (20)
JZ0—Netherlands New Guinea (28)
K, W—United States of America (3, 4, 5)
KA—See JA.
KA0—Bonin and Volcano Is. (27)
KB6—Baker, Howland and Amer. Phoenix Is. (31)
KC4—Navassa Is. (8)
KC6—East. Caroline Is. (27)
KC6—West. Caroline Is. (27)
KG4—Guantanamo Bay (8)
KG6—Mariana Is. (27)
KH6—Hawaiian Is. (31)
KJ6—Johnston Is. (31)
KL7—Alaska (1)
KM6—Midway Is. (31)
KP4—Puerto Rico (8)
KP6—Palmyra Group, Jarvis Is. (31)
KR6—Ryukyu Is. (25)
KS4—Swan Is. (7)
KS6—Amer. Samoa (32)
KT1—See CN2.
KV4—Virgin Is. (8)
KW6—Wake Is. (31)
KX6—Marshall Is. (31)
KZ5—Canal Zone (7)
LA, LB—Jan Mayen (40)
LA, LB—Norway (14)
LA, LB—Svalbard (40)
LU—Argentina (13)
LU-Z—See CE7Z, VK1, VP8.
LX—Luxembourg (14)
LZ—Bulgaria (20)
M1—San Marino (15)
MB9—See OE.
MP4—Bahrein Is. (21)
MP4—Kuwait (21)
MP4—Qatar (21)
MP4—Trucial Oman (21)
MS4—See I5.
OA—Peru (10)
OD5—Lebanon (20)
OE, MB9—Austria (15)
OH—Finland (15)
OK—Czechoslovakia (15)
ON4—Belgium (14)
OQ5, 0—Belgian Congo (36)
OX—Greenland (40)
OY—Faeroes (14)
OZ—Denmark (14)
PA0—Netherlands (14)
PJ2—Neth. West Indies (9)
PK1, 2, 3—Java (28)
PK4—Sumatra (28)
PK5—Nether. Borneo (28)
PK6—Celebes and Molucca Is. (28)
PX—Andorra (14)
PY—Brazil (11)
PZ1—Nether. Guiana (9)
SM—Sweden (14)
SP—Poland (15)
ST—Anglo-Egyptian Sudan (34)
SU—Egypt (34)
SV—Greece (20)
SV—Crete (20)
SV—Dodecanese (20)
TA—Turkey (20)
TF—Iceland (40)
TG—Guatemala (7)
TI—Costa Rica (7)
TI9—Cocos Is. (7)
UA1, 3, 4, 6—European R.S.F.S.R. (15, 16, 17)
UA9, 0—Asiatic R.S.F.S.R. (17, 18, 19, 25)
UB5—Ukraine (16)
UC2—White Rus. S.S.R. (16)
UD6—Azerbaijan (21)
UF6—Georgia (21)
UG6—Armenia (21)
UH6—Turkoman (17)
UI8—Uzbek (17)
UJ8—Tadzhik (17)
UL7—Kazakh (17)
UM8—Kirghiz (17)
UN1—Karelo-Finnish Republic (16)
UO5—Moldavia (16)
UP2—Lithuania (15)
UQ2—Latvia (15)
UR2—Estonia (15)
VE, VO—Canada (2, 3, 4, 5)
VK—Australia (29, 30)
VK1—See CE7Z, LU-Z, VP8.
VK1, ZC2—Cocos Is. (29)
VK1—Heard Is. (39)
VK1—Macquarie Is. (30)
VK9—Norfolk Is. (32)
VK9—Papua Territory (28)
VK9—Territory of New Guinea (28)
VO—See VE.
VP1—Br. Honduras (7)
VP2—Leeward Is. (8)
VP2—Windward Is. (8, 9)
VP3—Brit. Guiana (9)
VP4—Trinidad and Tobago (9)
VP5—Cayman Is. (8)
VP5—Jamaica (8)
VP5—Turks and Caicos Is. (8)
VP6—Barbados (8)
VP7—Bahama Is. (8)
VP8—See CE7Z, VK1, LU-Z.
VP8—Falkland Is. (13)
VP8—South Georgia (13)
VP8, LU-Z—South Orkney Is. (13)
VP8—Sth. Sandwich Is. (13)
VP8, LU-Z—South Shetland Is. (13)
VP9—Bermuda Is. (5)
VQ1—Zanzibar (37)
VQ2—Nth. Rhodesia (36)
VQ3—Tanganyika Terr. (37)
VQ4—Kenya (37)
VQ5—Uganda (37)
VQ6—Br. Somaliland (37)
VQ8—Chagos Is. (39)
VQ8—Mauritius (39)
VQ9—Seychelles (39)
VR1—Gilbert and Ellis Is. & Ocean Is. (31)
VR2—Fiji Is. (32)
VR3—Fanning Is. Group (31)
VR4—Solomon Is. (28)
VR5—Tonga (Friendly) Is. (32)
VR6—Pitcairn Is. (32)
VS1—Singapore Is. (28)
VS2—Malaya (28)
VS4—Sarawak (28)
VS5—Brunei (28)
VS6—Hong Kong (24)
VS9—Aden & Socotra (21)
VS9—Maldive Is. (22)
VS9—Sultan. of Oman (21)
VU2—India (22)
VU4—Laccadive Is. (22)
VU5—Andaman and Nicobar Is. (26)
XE—Mexico (6)
XZ—Burma (26)
YA—Afghanistan (21)
YI—Iraq (21)
YJ—See FU8.
YK—Syria (20)
YN—Nicaragua (7)
YO—Roumania (20)
YS—Salvador (7)
YU—Yugoslavia (15)
YV—Venezuela (9)
ZA—Albania (15)
ZB1—Malta (15)
ZB2—Gibraltar (14)
ZC2—See VK1.
ZC3—Christmas Is. (29)
ZC4—Cyprus (20)
ZC5—Br. North Borneo (28)
ZC6—Palestine (20)
ZC7—See JY.
ZD1—Sierra Leone (35)
ZD2—Nigeria (35, 36)
ZD3—Gambia (35)
ZD4—Gold Coast, Br. Togo-Land (35)
ZD6—Nyasaland (37)
ZD7—St. Helena (36)
ZD8—Ascension Is. (36)
ZD9—Tristan da Cunha and Gough Is. (38)
ZE—South. Rhodesia (38)
ZK1—Cook Is. (32)
ZK2—Niue (32)
ZL—New Zealand (32)
ZM6—British Samoa (32)
ZM7—Tokelau (Union) Is. (31)
ZP—Paraguay (11)
ZS1, 2, 4, 5, 6—Union of South Africa (38)
ZS2—Marion Is. (38)
ZS3—Sth. West Africa (38)
ZS7—Swaziland (38)
ZS8—Basutoland (38)
ZS9—Bechuanaland (38)
3A—Monaco (14)
3V8—Tunisia (33)
4S7—Ceylon (22)
4W1—Yemen (21)
4X4—Israel (20)
5A—Libya (34)
9S4—Saar (15)
—Aldabra Is. (39)
—Bhutan (22)
—Comoro Is. (39)
—Fridtjof Nansen L. (40)
—Kermadec Is. (32)
—Mongolia (23)
—Nepal (22)
—Wrangel Is. (19)

AMATEUR CALL SIGNS

FOR MONTH OF SEPTEMBER, 1955

NEW CALL SIGNS

VK—

New South Wales

2MV—C. Welsh, C/o. Miss Linsely, 96 Staples St., Kingsgrove.
2AMN—R. D. Martin, 172 Lane St., Broken Hill.
2AOK—L. J. King, 24 Anderson St., Chatswood.
2ZBP—J. G. Pratt, "Inglewood," R.M.B. 23, Illabo.
2ZBT—G. T. Adams, 14 Early St., Queanbeyan.

Victoria

3FP—D. Burkitt, Main Rd., Doncaster.
3ADZ—G. E. Delahoy, Eden Park Rd., Whittlesea.
3OLU—L. E. Lloyd, Murray Valley Highway, Nyah South.
3ZAO—R. A. Bailey, 15 Riverside Rd., Ivanhoe.

Queensland

4FF—J. C. Fairweather, Broad St., Labrador.

South Australia

5BF—D. G. Goode, Yankalilla.

Western Australia

6JJ—B. Bellringer, 97 Grosvenor Road, Mt. Lawley.

CHANGES OF ADDRESS

VK—

New South Wales

2EJ—A. T. Noon, Postal: 29 Oakleigh Rd., Glenhuntly, S.E.9, Victoria.
2EZ—W. G. Spencer, Station: 27 Kardinia Rd., Clifton Gardens; Postal: 17a Stanley Ave., Mosman.
2LI—M. P. Moore, 10 Milford St., Randwick.
2QI—C. Bowler, Station: S.S. "Baroota"; Postal Address: 25 Castle St., Randwick.
2AJY—J. K. Fullagar (Dr.), 420 Orange Grove Rd., Booker Bay, via Woy Woy.
2ANH—N. H. Hicks, 1 Kitchener St., Oatley.
2AOB—R. B. Digby, 60 Queens Pde., Newport.
2APZ—R. L. Kerdel, 336 Mica St., Broken Hill.
2AQG—R. E. Gunnourie, 251 New South Head Rd., Edgecliffe.
2AQP—H. F. Powell, 11 Bridge Rd., North Ryde.
2AQS—N. C. Scott, 56 Seventh St., New Lambton, Newcastle.
2ASM—W. C. Clarke, 9 Beacon Ave., Brookvale.
2AWE—R. M. Weston, 127 Anzac Pde., Kensington.
2AXB—E. Curruthers, Station: Flat 16, Hedingly, The Esplanade, Elizabeth Bay, Sydney; Postal: Box 1189, G.P.O., Sydney.
2AXS—R. R. Smith, 28 Prospect St., Carlton.
2ZAS—S. D. Russell, 310 Unwins Bridge Rd., Tempe.

Victoria

3DC—D. G. Caldwell, Lot 49, Montgomery Ave., Syndal.
3FI—H. R. Fitzsimmons, 13 Leithen St., Shepparton.
3RL—K. E. Olsson, 6 Kalonga Rd., Nth. Balwyn.
3ARO—R. C. Pulford, St. Helena Rd., Greensborough.
3ASH—R. R. Elkin, 496 Moorabool St., South Geelong.
3ZBH—R. J. Harrison, Railway Pde., Glenroy.

Queensland

4BL—W. A. Easterling, 16 St. Peters St., St. Peters.
4BX—G. J. Walker, 23 Hughes St., Hermit Park.
4OA—D. B. Owen, 24 Anzac Ave., Toowoomba.
4SE—S. E. Molen, C/o. Radio Station 4LG, Cramsie, Longreach.
4TF—R. C. Tow, 5 Hooper St., Boonah.

South Australia

5GE—R. G. Pitts, Flying Doctor Base, Vincent St., Port Augusta.
5SG—S. G. Tonkin, 76 Ways Rd., Hampstead Gardens, Adelaide.

Western Australia

6LJ—J. Mead, 68 Alexander St., Wembley.
6WI—Wireless Institute of Australia (W.A. Div.), Station: 110 Edenborough St., Mt. Hawthorn; Postal: Box N1002, G.P.O., Perth.

Tasmania

7FC—F. C. Harland, Station: 12 Wellesley St., South Hobart; Postal: 42 Wellesley St., South Hobart.
7WG—W. G. Gough, 111 Pottery Rd., Lenah Valley.

Territories

9AS—J. A. Whittaker, Station: A.P.C. Oil Exploration Station, Upper Bamu River; Postal: Seismie Five, C/o. A.C.C., Port Moresby.

CANCELLED CALL SIGNS

VK—

New South Wales

2DM—D. W. McDonald.
2XI—C. P. Pickup.
2AGP—G. T. Ralph.
2AIF—J. C. Fairweather. Now VK4FF.
2APN—D. G. Littlejohn.

Victoria

3YA—A. R. Young.
3ACW—C. Welsh. Now VK2MV.
3AGO—E. C. Sloss.
3AOF—F. P. O'Dwyer.

South Australia

5TM—R. D. Martin. Now VK2AMN.

Territories

1DY—G. E. Delahoy. Now VK3ADZ.
9OK—L. J. King. Now VK2AOK.
9PF—P. T. Filmer.

FOR MONTH OF OCTOBER, 1955

NEW CALL SIGNS

VK—

New South Wales

2SD—L. W. N. Squires, Portable, C/o. 27 Fletcher St., Bondi.
2AGE—G. A. Dowse, 6 Bangalow Rd., Ballina.
2AJN—A. J. Myers, 515 Pennant Hills Rd., West Pennant Hills.
2AQA—18 L.A.A. Regt. R.A.A., Chandler St., Kogarah.
2AYA—G. A. Ahlstrom, 21 Melville St., Strathfield.
2ZBB—G. P. Pearson, 17 Esher St., Burwood.
2ZBD—J. I. Cuming, 8 Sortie Port, Castlecrag.
2ZBF—B. C. Fleck, 20 Yoolooma St., Griffith 5S.

Victoria

3JK—J. K. Herd, Portable, C/o. Reid St., Wangaratta.
3PD—W. R. Moffatt, 1 Rothsay Ave., Box Hill South.
3AJX—A. R. Jarman, 8 Edward St., Horsham.
3AKU—M. J. Doolan, 32 Skene St., Colac.
3AWV—K. J. Love, 27 Bishop St., Oakleigh.
3AZB—A. W. M. Buesst, 5 Torresdale Rd., Toorak.
3ZBA—W. A. Ferres, 26 Jeffers St., Noble Park.

Queensland

4BB—S. K. Howard, Portable, C/o. 40 Branyan St., Bundaberg.
4IH—I. H. Mullins, Tulley St., Thursday Island.
4ND—N. G. Dangerfield, 23 Graham St., Ayr.
4OC—E. B. Connor, Cassowary St., Longreach.
4XD—K. W. Nutt, Station: Mulgrave Rd., Earlville via Cairns; Postal: C/o. Broadcasting Station 4CA, Cairns.

South Australia

5ZAP—G. R. Pope, 16 Seaview Gr., Blair Athol.

Western Australia

6JH—J. W. Hughes, 373 Marine Drive, Geraldton.
6MM—G. Miles, 31 The Avenue, Nedlands.
6RB—E. F. Robins, 148 McDonald St., Joondanna Heights.
6ZAF—T. C. Berg, 72 Fourth Ave., Mt. Lawley.

Territories

9AB—A. B. Bunting, Station: 3 Mile, Rouna Rd., Port Moresby; Postal: P.O. Box 38, Port Moresby.
9SD—S. D. Sutherland, Station: Cr. Yarra Ave. and Tavua St., Rabaul; Postal: C/o. P.O. Box 55, Rabaul.

CHANGES OF ADDRESS

VK—

New South Wales

2EX—A. H. Outtrim, 30 Boomerang Rd., Springwood.
2IY—T. H. Cahill, C/o. Milparinka P.O.
2KU—I. W. Archibald, 52 Vista St., Sans Souci.
2TJ—J. W. Thompson, 11 Temple St., Stanmore.
2ACK—C. Jeffery, 34 Waitara Pde., Hurstville.
2ALD—R. F. Smith, 47 Denman St., Cronulla.
2AQJ—K. B. Pounsett, Flat 22, Seiffert Centre, Lowe St., Queanbeyan.
2ARI—R. H. H. Roach, 49 Henley Rd., Flemington.
2AWO—W. H. Field, Postal: 10 William St., Double Bay.
2AXD—E. A. Druitt, 43 Canal St., Griffith.
2ZAH—W. H. Harder, 148 Bismuth St., Broken Hill.

Victoria

3FO—C. R. Gibson, High St., Maldon.
3ABA—J. O. Bail, 20 Relowe Cres., Box Hill North.
3APK—P. C. Perkins, 29 Richmond St., Geelong East.
3AQK—R. J. Hildebrand, 101 Tambet St., East Bentleigh.
3AVS—M. Strohfeldt, 18 Alexandra Ave., Elsternwick.
3AZC—L. Cunnington, 133 Gordon St., Traralgon.

Queensland

4KW—H. S. Dearness, 16 Harvison St., Mackay.
4RI—R. H. Cordon, Cr. Mark and Gleason Sts., Hermit Park, Townsville.

South Australia

5FF—R. F. Farmer, C/o. Mr. C. W. Farmer, 7 Kirkcaldy Rd., Grange.
5KS—R. A. Sedunary, 138 Wellington Rd., Payneham.
5NC—R. G. Clayton, 27 Harbrow Gr., Seacombe Gardens.
5RN—D. S. Robertson, Station: Maroonika, Mt. Lofty; Postal: C/o. Physics Dept., Box 4 Canberra, A.C.T.

Western Australia

6UF—F. H. Turner, 15 James St., East Cannington.
6ZX—E. E. Grey, Commonwealth Bank of Aus., Leederville.

Tasmania

7CF—C. J. Frisby, Flinders St., Brooklyn, Burnie.
7RL—R. V. Bulman, 2 Bond St., Kings Meadows, Launceston.

Territories

9WL—J. Widdup, C/o. R.T.C., Sohana, Bougainville.
9DS—D. B. Schroder, C/o. D.C.A., Madang.

CANCELLED CALL SIGNS

VK—

New South Wales

2HJ—J. R. Hamilton (Miss).
2ADM—L. E. Radclyffe.
2ATC—Sydney Technical College.

Victoria

3AWM—W. R. Moffatt. Now VK3PD.

Queensland

4IB—D. N. Bismire.
4JS—H. W. Glocher.

Tasmania

7XD—K. W. Nutt. Now VK4XD.

Territories

1TF—T. F. Firmstone.

FIFTY MEGACYCLES AND ABOVE

FREQUENCY CHANGE FOR FIFTY MEGACYCLES BAND

Reminder: 50-54 Mc. Band closes on 31st January, 1956.
See you on 56-60 Mc. Band (now open).

NEW SOUTH WALES

An interesting lecture was given at the November meeting of the V.h.f. Group by Mr. Vanderly on co-axial resonators. Visitors present were 2ASA, 2EI, 2ADS and 2PL. Discussion took place on the new rules applying this year to the Ross Hull Contest. The Group strongly objected to these rules and a letter was sent to all Divisions, F.E. and the Federal Contest Committee asking that the rules be withdrawn.

The Fox Hunt held on Sunday, 20th, was won by Bob 2OA with Perc 2APQ as navigator. Dave 2AWZ was second and 2LG was about half a mile away when the location was announced. The fox, John 2AZO and 2ATO, proved to be a very allusive one. 2ANF and 2AWZ were very close to him when he cut the transmission at lunch time in the Richmond area. However, he eluded them and made his final location in the bush, well hidden, near the Yellow Rock Lookout. Harry 2AJZ had bad luck with rx trouble and withdrew after lunch.

3ZAY/P made a surprise visit to VK2 with a big signal into Sydney from Wentworth Falls. Dave made quite a lot of contacts with the Sydney stations from this location, which is about 50 miles from Sydney and about 3,000 feet high.

50 Mc. has shown increased activity with the summer coming on. There were a couple of openings during the month to VK3 and VK4. The opening of the Ross Hull Contest should bring a lot of activity to this band.—2LG.

VICTORIA

A well attended v.h.f. meeting heard an interesting talk by Barry 2ZAG on v.h.f. components at present available in Australia. During his trips Interstate, Barry has collected a considerable number of miniature capacitors, trimmers, resistors, etc., which although available, are not widely known to Amateurs. Berry 3APB came along to the meeting to say goodbye; he is going back to VK2 to take a position with a radio firm. He says it was an opportunity he just couldn't miss and feels it will give him more spare time to spend at Amateur Radio. Berry and his XYL, Heather, were very popular here in VK3 at fox hunts and tx hunts and we're all sorry you are leaving us, but we hope to contact you at your new QTH at Cronulla. Bill 3ZAC has been transferred to the Air Force station at Singapore. We'll miss you, too, Bill.

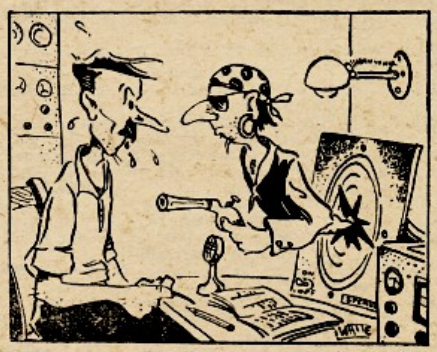
The fox hunt, as usual, provided participants with a very enjoyable night out with a lot of amusing incidents. At the first stop in a lane at the rear of 3JD's home in Middle Park, the only hound to make a catch was Eric 3ADU. The second stop was in tail-light alley in Elwood. This appeared to cause much confusion among the usual frequenters of that particular spot, which was added to as the hounds arrived on the site. All the hounds made several catches during the evening, the most unique catch though, was when the fox circled the control station's home and on passing slowly by the front gate, Bob 3OJ ran down the path to meet him. This is the first time that a control station has caught the fox on the run. 3ALZ and 3ZAJ helped Bob with cross bearings during the evening. The final location was at the home of Bob 3WY, in Burwood, and fox hunters enjoyed meeting Bob and his family and seeing his shack. Some made the most of the opportunity by getting a QSL card from him. We are grateful to Bob and Mrs. Anderson for making their home available to the Group and thank them most sincerely.

The first field day of the summer season was a very popular one. Those who went portable were 3GM at Mt. Bunninyong, 3ZBU at the Camel's Hump, Mt. Macedon, 3AHL at Kinglake, 3ADU at Yuroke, 3IE at Mt. Dandenong, 3LN at Mt. Macedon and 3ZAD Mt. Dandenong. Home stations played their part and came on the band in full force, giving portables a never-ceasing string of contacts. During the day there were probably about 50 stations operating; this was very encouraging although we would like to hear more stations from portable locations on the next field day, the date of which will be broadcast over 3WI.

The following are the rules governing field days for this season: Scoring will be rated at one point per air line mile in each contact. One contact per band, per field day. The mileage must be agreed to by both parties and will form part of the QSO. QSO will not be complete and points cannot be claimed unless the mileage has been arrived at and agreed to by both parties. Make sure to take an adequate map and compass with you. The bands that may be operated are 144 Mc. and above. The time duration of the field day will be the 24 hours of the Sunday. Both portable and home stations are eligible to participate, but in each contact one station at least must be a portable. Home-to-home station contacts will no be awarded points. Logs to be forwarded to the Secretary of the V.h.f. Group, Bob Stevens, VK3OJ, 17 Jervis Street, Burwood, within fourteen days of the date of the field day. An attractive certificate is to be awarded to the winner of each field day for this season.

Evan 3AAP has a new daughter, his first harmonic, 8½ lbs. too; congratulations, OM. 3BQ's son, John, and 3ANK's brother, Don, have both passed their A.O.L.C.P. exam and are awaiting a "Z" call.—Phyl Moncur.

Gippsland stations active during November were 3ZAB, 3QZ, 3TH, 3DI, 3VL, 3ZD and 3TY (Sale). Good conditions on night of 27th November gave 3TY his first Melbourne contact with 3RK, who is the most regular and consistently strong signal heard in Gippsland from the Melbourne area. 3TY uses a 522 and six el. array with screen reflector and is building a new converter. 3ZAB, 3TH and 3ZD are gradually acquiring bits and pieces for new beams and 3VL has been relatively inactive due to arrival of new junior op. 3QZ at Traralgon generally on Sunday nights using about 3w. 3TO, from Yallourn, will not be back on 2 mx until after Xmas.—3ZD.



Strike! There must be Pirates on the Band!

WESTERN AUSTRALIA

Most important event of the month was the trip of Bob 6BE and Wally 6ZAA to Albany. 6ZAA's tx and rx for 2 mx were taken and Bob and Wally 6WG provided the 40 and 80 mx links. The week-end was a real hamfest with Wally 6WG, Bernie 6KJ, Norm 6LT, Harry 6WZ, and Ross 6RD all participating.

The gear was set up at Wally's 6WG shack and the antenna used was Wally's 12 el. phased array. Input was 60w. on c.w. Signals on Saturday were 559 from Albany. The signal was heard by Rolo 6BO, Don 6HK, Ralph 6ZAD and Don 6ZAV. No signals were heard from Perth. On Saturday evening signals again were put into Perth over the 240 mile path, but again Rolo could not be heard. On Sunday morning a concerted effort was made to establish two-way contact, but despite reception of 6BE/P signals at 449 in Perth, no Perth station was heard. Whilst two-way contact was not made, the trip did give all concerned a thrill as it was the most distant check made in W.A. apart from Rolo's efforts to Adelaide.

The thanks of the v.h.f. gang in Perth go to the Albany people for their help, and personally I thank Wally, Bernie and Norm for sparing no effort to facilitate our operation. Thanks!

Also promising well for country DX was a phone call to your scribe from Tom Talbot who has applied for his Z call. Tom is in Brunswick, 100 miles from Perth, and hopes to operate on 2 mx. The V.h.f. Group will organise an expedition to meet Tom and test the path between Brunswick and Perth. Jack 6EL in Bencubbin has also mentioned an interest in 2 mx, but nothing definite is promised.

Don 6DW, Bruce Rock, made a trip across to Merredin to visit Mal 6MU. Don took a converter and listened for Perth signals. Don has had his 8012 in the final succumb and has been on low power since.

In Perth Ron 6ZAR has a strong signal from his 829. Drive troubles prevent him running much more than 30w. Tom 6ZAF is still having trouble with the tx, but has talked his landlord into joining in the V.h.f. Group's tx hunt. Ralph 6ZAD is happier now with his motor driven beam. He almost went astray with a vertical J, inspired by Roger 6RK. Roger suggested vertical polarisation to ease cross town contacts. Warren 6WJ and Ralph did try it temporarily, but gave the idea away—fortunately! Try haloes or turnstiles next time!

288 Mc.: All is quiet here but rumour has it that the W.A. 288 Mc. record will be broken shortly.

Finally, a reminder of real DX. 6 mx operators in the West and some of the Z licensees monitoring 50 Mc. will be turning it on when 6 mx is open in January. With the improving conditions, the world record of 1,400 miles could be in jeopardy. Who operates on 144 Mc. about 100 miles east of Adelaide?—6ZAA.

AUSTRALIAN V.H.F. RECORDS

Band Mc.	Stations	Date	Miles	World Rec'd
50	VK5KL-W7ACS/KH6	26/8/47	5355	10500
	VK6HK-VR2CG	3/1/55	3928	
	VK6WG-VR2CG	3/1/55	3816	
	VK9DB-ZL3GS	26/12/53	2804	
	VK3IM-VR2CB	30/12/53	2405	
	VK7BQ-VK9DB	——	2211	
	VK7LZ-VK9DB	——	2211	
144	VK5GL-VK6BO	31/12/51	1328	1400
	VK5QR-VK6BO	9/2/52	1328	
	VK3GM/3-VK7LZ/PF	9/3/52	317	
288	VK5MT/5-VK5RO/5	13/4/52	106	
	VK3AFJ/3-VK3AAF/3	21/3/54	63.8	
	VK6BO-VK6DW/6	1949	25	
576	VK3ANW-VK3AKE	11/12/49	81.6	
2300	VK3ANW-VK3XA	18/2/50	9.1	150

The above contacts are best known to date, but what of VKs 2, 4, and 7 contacts? Please send FULL details of your best contacts through your Division to F.E., giving particulars of both stations' locations at the time of contact so that your record may be listed above.

EDITORIAL

(Continued from Page 1)

in 1908 to a Movement comprising Boy Scouts, Wolf Cubs, Sea Scouts, Rover Scouts, Queen Scouts, Girl Guides and Brownies. The station is operating under the official Federal call sign of the Wireless Institute of Australia—VK3WIA.

During his early military career in Africa, Baden-Powell observed the native warriors who, because they were the bravest of the brave, held spears in their right hands whilst they shook hands with their left hands. From this grew the traditional left-hand handshake of the Boy Scout. It is therefore with the greatest of pleasure that the Wireless Institute of Australia, as an international democratic representative of the Amateur Transmitting Movement, shakes hands with the International Boy Scouts Association in promoting goodwill amongst Nations.

FEDERAL EXECUTIVE.

DX ACTIVITY BY VK3AHH†

PROPAGATION REPORT

3.5 Mc.: The seasonal increase in noise level naturally affects communications with overseas places. However, conditions to **North America** and the **Pacific Islands** continued to be consistent and reasonably reliable, between 0900z and 1100z.

7 Mc.: Again, no unusual conditions were observed. Times of band openings were: **Europe** around 0800z and between 1900z and 2100z; the **American Continents** and the **Far East:** 0600-1400z.

14 Mc.: General conditions during the month of November were fair to good. Long path break-throughs to **Europe** have been observed between 2200 and 0200z. **African** conditions peaked around 1530-1730z, while the **American Continents** were well represented between 1200 and 1600z and again around 1930-2230z.

21 Mc.: This band provided good conditions to all continents, **African** conditions were likely to exist between 0500z and 1200z, with **Europe** around 0900-2400z. **South America** was workable between 0000z and 0800z, while **North America** showed up around 2100-0400z.

27/28 Mc.: Good break-throughs to five continents have been reported. Times were for **Europe** between 0800 and 1300z, and 2130 to 0200z for the **American continents.**

NEWS AND NOTES

As usual for this time of the year, **Australian Antarctic Expeditions** are in the headlines! A number of Amateurs will again participate in 1956. Our "bon voyage" to the Macquarie Island and Mawson teams is accompanied by welcome-back-home greetings to **VKs 1DC, 1HH** and **1ZM**, who represented Macquarie Island for the last twelve months. The new team will take over around Christmas time. **VK1DA** and **VK1IJ** (ex-7IJ, 3IJ) will be the new call signs.

With apologies to my v.h.f. colleagues, I cannot resist the temptation to mention that "VK4DP is believed to have been heard by two JA stations (one of which was JA1AA) on 50 Mc. at S9" (thanks 4SE). The ball is in the v.h.f. corner now!

Amsterdam Island is represented by **FB8ZZ** on 14026 Kc. (from W6YY).

14 Mc. phone operation seems to be predominant with **CR7AU, CR7CO,** and **CR7DI** (from W6YY).

LU1ZY is expected to be active from **South Sandwich Islands,** beginning late in December or early in January (from BERS195).

Nicobar Islands—VU5—is another one to look forward to (from 5WO).

The **Gough Island** expedition **(ZD9AD)** had been delayed by bad weather, but has now reached its destination and is active on 14 Mc. c.w. and phone (from 5WO and W6YY).

FD4DB is on 14 Mc. c.w. (from 5WO).

ZLs 2GX and **2CU** will soon make their trip to **Kermadec Islands** (from W6YY).

QTHs OF INTEREST

CS3AC—C/o. A.P.O. 406, New York, U.S.A.
CE2CO—P.O. Box 24, Llayllay, Chile.
VQ2SK—Monze Station, Northern Rhodesia.

ACTIVITIES

3.5 Mc.: S.w.l. **Dave Jenkin** heads this month's list with DU7SV, W5DWT, W6BJU, W7AJS, and W8HOX. **3AHH** also heard a number of Ws.

7 Mc.: Laurie **2AMB** worked XW8AB*, VQ4DW* and heard YU2BO, YU2AC, VS1GX, EA5FI. Syd. **4SE** reports CT1DJ. **Dave Jenkin** heard JA9AA and KG6AGT.

14 Mc. c.w.: Lyell **2GW:** AC5PN*, CE3DZ*, CE4AD*, CN8MM*, CR7CN*, CR9AI*, EA1CP*, EA4CS*, EA5FC*, EA6AF*, EA8BK*, EA8CA*, ET3AH*, FA8AN*, FA8BG*, FA8DA*, FA8IH*, FA8RJ*, FB8BR*, FB8BS*, FY7YE*, HP1EH*, HZ1HZ*, IT1TAI*, KT1EXO*, KZ5WZ*, LU1DCQ*, LU2DAW*, LU2GB*, LU3FO*, LU3HR*, LU3ZK*, LU6PA*, MP4QAL*, MP4TAA* (?), PY2BAU*, SU1DD*, TA3US*, VK1AWI*, VK1RA*, VP2VB/P*, VP9BM*, VP9CI*, VQ6LQ*, VQ8CB*, VS4BA*, VR2*, XW8AB*, YA1AM*, ZB1HK*, ZC4CK*, ZC4IP*, ZD2DCP*, ZD6BX*, ZS5BF*, ZS5JT*, ZS5KA*, ZS6AKH*, ZS6IX*, 3V8AN*, 4X4CK*, 4X4GS*. Laurie **2AMB:** CE1DS*, CR7IZ*, LU8QA*, XW8AB*, ET2LB*, HB9*, VU2CM*, ZS2X*, MP4QAL*, CP3CA*, 3W8AA*, and FB8BU, G3KLK/MP4, ZS5GF, ZS6RJX, TI2RI, ZC4IP, 4X4DH, VU2JK, XE1MB, XE1RX, XE1NQ, DU1CV, CR7CO, OD5AU, ZB1HKO, LA4KD, EI9Y, CE3DZ, HB9, ZD2WAF, VK1RA. Bud **2AQJ:** KV4*, XW8AB*, JA*, KR6*, KP4YT*. Jack **3JA:** PJ2AJ*, YN1PM*, TI2MAR*, MP4QAL*, LU1VV*, LU4HU*. Ken **3KR:** I1*, JA*, VQ4DW*, KAs*, KG6*, YU*, HB9*. Fred **3YS:** FK8*, YJ1DL*, VS4BA*, VP9BM*, and HZ1AB, ZC5CT, VQ8CB, YA1AM. Bob **4RW:** VQ2W*, ON4*, EA5AF*, VQ3CF*, VQ4DT*, CR7CI*, YV1AD*, KZ5IF*, AC5PN*, VQ6LQ*, ZD6BX*. Syd. **4SE:** ZE4FF*, VR6LQ*, JA/KA*, CP5EK*, VS6AE*, HS1VR*, KG6*, VS4BA*, BV1US*, LU2GB*, LU4HW*, KR6*, Gs*, ZS6*, ZS5*, ZS1*, VS1BJ*, KV4*, YV4AX*, CR9AI*, GI4RY*, ON4*, PA0*, SM*, HB9RZ*, LA5IC*, VU2SX* and OH, ZC5CT, LU4DMG, LU8EN, FA8AN, ET2MZ, HZ2AEI, FQ8AX, AC5PN, SM, GM, GW, MD5UK, CR6AY, ZD6RD, CM2PX. Ray **5RK:** JA/KA*, KR6*, VR2*, G*, VU2BK*, KG6*, VE1AE*. Austin **5WO:** ZD2WAF*, VQ4DT*, FB8BE*, ZE2JC*, VP9BM*, CO2BL*, KV4BB*, KP4ZW*. Eric **BERS195:** AP2Q, BV1US, CE7ZJ, CN8EJ, CR7IZ, CS3AC, CE4AD, CT1DJ, CO7AH, DU3DD, EA9AP, ET2AG, FA8CR, FK8, FO8AB, G, GM, GW, HZ1AB, HZ2AEH, KC6CG, KG4AV, KG6, KR6, KP4KD, LU1ZV, LU2ZV, LU7XP, OA4AU, MD5UK, LJ3D, PY2CK, MP4QAL, 5A4TZ/MP4, ST2AC, ST2NG, TI2PZ, YA1AM, ZP5AY, VK1EM, VK1RA. **Dave Jenkin:** XW8AB, JA/KA, 4S7PT, KV4, VS1BJ, LU8EN, VU2MA, CE3DZ, YV1AD, YV5BJ. **3AHH:** VS4BA*, EA2CR*.

14 Mc. Phone: 2AQJ: TI2CHV*. **3JA:** LU8CN*, LU8MU*, XZ2SS*, FM7WF*, FM7WQ*, YV5AO*, OA2A*, LU4DMG*, KP4ABD*. **4RW:** ZS6RT*, CE3RN*, LU7FBF*. **5WO:** HH1W*, HP3FL*, VE*, HK3PC*, HP1EH*, HH1HB*, CS3AC*, GM*, HI6EC*, LU3MZ*, OA2A*, CE2CO*, VK1AWI*, YV5BS*, HP1ED*, FM7WF*, YV5EU*, CX5AF*, LU8MU*, VQ5EK*, ST2DB*, ET2MZ*, ZS5QT*, ZS6AJH*, ZS9G*, CN8MM*, VQ4EO*, VQ2SK*, VQ2DA*, FB8BV*, ZS6HO*, ZS6AHE*, FA8AY*, HK3FV*, CO2BL*, EA8AH*, CP8AK*. John **WIA-L3019:** SV0WS, OA2A, HR1CB, YS1A, MP4BBL, VE, VS6CG, KV4, ZC4RX. **BERS195:** HK3FV, KP4ABD, KR6, OA2A, VQ4AQ, VK1ZM, XZ2KN, 4S7WM. **Dave Jenkin:** Gs.

21 Mc.: Neville **2APL:** JAs*, KG6*. **3JA:** ZS4FP*, ZS4GN*, 4S7SN*, VR2*, G*, GD*, CR9AH*, ZS6GV*, ZS6WS*, ZS6JW*, ZS4GK*, ZS5PM*, LU3DD*, CE3DY*, ZC4RX*, HC1FS*, OH1NK*, F3DA*, DL*, F3MS*, OH2JC*, ON4DB*, OH5PX*, SM7BVO*. **4RW:** GM3DHD*. **4SE:** JA/KA*, VS6*, DL/DJ*, PA0FAB*, Gs*, ON4*, F8*, SM7AVA*, and VQ3FN, FO8AD. **5WO:** ZS6JW*, CE3QJ*, KG6*, ZS6FN*, G3HFD*, G2PU*, DL1JV*, SM5CO*, DL1SD*, HC1FS*. Dave **3ZAQ** (WIA-L3003): KR6PI, JA, VS2DB. **Dave Jenkin:** KH6s, VS6DE, CE3DY, VS6AE, KR6RB, KR6CR, CE3QJ, YV5AB.

27/28 Mc.: Les **4XJ** worked W0*, W5*, W6*, W7*, W8*, VE4RO*, VE5CT*, VE7EL*, VE7AFA*, VE7VZ*, KH6*, HC1ES*, HC1FS*, HC1KV*, DL1SP*, DL9ZN*, DL3IR*, XE1FU*, JA1ANG*, TG9JW*, BV1US*, and heard TI3IA and YN4CB. John **5HI** adds VE7ALC*, JA1ANG*, G2IJ*, KH6*, VS2DB*, Ws*, VS6CZ*, GW3WO*, KA2NY*, PA0XD*. **5WO** spoke to G5SD* and G8TA*. **3ZAQ** heard GD3GMH, ON4NC, DL4. Norman **BERS11494** listened to YN4CB, W3, W4, W5, W6, W7, KH6, OH, G.

Rare QSLs were received by: 4XJ: HC1KV. **5WO:** CX5AF, CE2CO, VP9AK, HP1EH. **BERS-195:** PJ2AE, PY2AHW, VP8AZ, VS1GX, XE1UU, YV1AD, 4S7GE, 4X4GW, 5A2TZ, SM4AWC/MM.

This is the list of last month's contributors: PJ2AJ, ZL1CI, the Northern California DX Club, and VKs 2ID, 2QL, 2AFE, 2AMB, 2APL, 3HE, 3HL, 3IY, 3JA, 3JE, 3KR, 3PA, 3PG, 3TE, 3WM, 3WQ, 3XO, 3YS, 3ZJ, 3ZP, 3ZU, 3ACN, 3AHC, 3AHM, 3ALD, 4HD, 4RW, 4SE, 5BY, 5HI, 5WO, 3ZAT, 3ZBO, and s.w.l's. BERS-195, WIA-L3019, Dave Jenkin (VK3), and Rod de Balfour (VK7).

This month, I say thank you to W6YY, and VKs 2GW, 2AMB, 2APL, 2AQJ, 3JA, 3KR, 3YS, 4RW, 4SE, 4XJ, 5HI, 5RK, 5WO, 3ZAQ, and WIA-L3019, BERS195, BERS11494 (VK2), and Dave Jenkin (VK3).

To all readers: Compliments of the Season with best DX wishes for 1956!

† Hans J. Albrecht, 10 Belgravia Ave., Box Hill North, E.12, Vic.
* Call signs and prefixes worked.
z — zero time—G.M.T.

D.X.C.C. LISTING

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.

PHONE

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK4FJ ..	21	181	VK3ATN ..	26	153
VK3BZ ..	3	176	VK4KS ..	9	152
VK4HR ..	12	176	VK6KW ..	4	150
VK6RU ..	2	170	VK3LN ..	11	141
VK3EE ..	10	163	VK4RW ..	23	141
VK3JD ..	1	155	VK3AWW	14	140

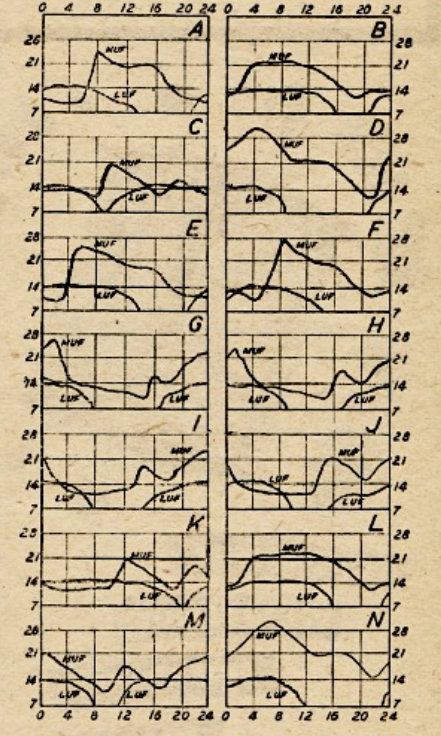
C.W.

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK3BZ ..	6	222	VK3CX ..	26	180
VK3FH ..	15	210	VK4EL ..	9	175
VK4FJ ..	29	206	VK5BY ..	45	172
VK4HR ..	8	200	VK3CN ..	1	163
VK3KB ..	10	200	VK6RU ..	18	161
VK2EO ..	2	183	VK5RX ..	23	159
Amendments					
VK3RJ ..	42	111			

OPEN

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK3BZ ..	4	231	VK2NS ..	16	195
VK2ACX ..	6	225	VK3HG ..	3	181
VK4FJ ..	32	217	VK4EL ..	10	175
VK4HR ..	7	214	VK6KW ..	13	171
VK6RU ..	8	204	VK2DI ..	2	170
VK3JE ..	12	198	VK4DO ..	15	168
Amendments					
VK3YS ..	57	112			

PREDICTION CHART FOR JAN., 1956



A—Eastern Aus. to West. Europe—Short Route.
B—Eastern Australia to South Africa.
C—Eastern Aus. to West. Europe—Long Route.
D—Eastern Australia to Far East.
E—Eastern Australia to Mediterranean.
F—Western Australia to Western Europe.
G—Eastern Australia to North West U.S.A.
H—Western Australia to North West U.S.A.
I—East. Aus. to North East U.S.A.—Short Route.
J—Western Australia to North East U.S.A.
K—East Aus. to North East U.S.A.—Long Route.
L—Western Australia to South Africa.
M—Eastern Australia to Central America.
N—Western Australia to Central America.

FEDERAL, QSL, and DIVISIONAL NOTES

FEDERAL

THE NEW YEAR

Once again the Federal Council and the Federal Executive of the Institute desire to wish all members a Happy and Prosperous New Year.

It is appropriate at this festive season to give a few moments' thought to those whose work and efforts have kept our Institute functioning. Many play a part, and a special vote of thanks and good wishes for the future goes out to the Magazine Committee, Federal Contest Committee, QSL Managers, Correspondents, Traffic Officers and the others who, behind the scenes, make for the smooth running of the W.I.A.

1956 promises much in electronics with Television on the immediate horizon. However, with experience from the past to guide its decisions, the W.I.A. can look with confidence to the future.

FEDERAL STATION VK3WIA

Members will have noted that the Federal Station VK3WIA is being used at the Pan-Pacific Scout Jamboree at Clifford Park, near Melbourne.

It is intended by Federal Executive to have this station in operation during the coming year.

Regular broadcasts, disseminating news to all Divisions, are proposed. These will be given by members of Executive and will cover topics of a Federal character. In this way, all will be kept informed of the activities and problems of Executive and its kindred bodies at first hand.

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FED. CONTEST COMMITTEE

A letter was received concerning the issue of Certificates for Awards made to winners of past Contests from which it appears that many VK/ZL Certificates have not been sent. It was resolved by the Committee that as soon as time permits the omissions would be rectified.

To assist the Committee, it is asked of contestants who were due for Awards in ALL the Contests run by the W.I.A. up to the end of 1954, that they notify the Committee immediately, Box 1234K, G.P.O., Adelaide, together with the details of Contest, Awards, etc.

The question of having a sub-committee conference at the Easter Convention, if one is to be held, was discussed at some length and following upon letters received from the Divisions regarding the framing of rules for the various contests, it would seen that such a conference will be the only means of arriving at some unanimity.

The value of comments received, along with logs submitted by contestants regarding rules, conduct of the contest, etc., brought serious discussion and it was agreed that these comments should be the true guide to any alterations. It was felt that those who submitted logs were the interested parties. However, where there is a definite policy directive, the Committee has no option but to follow that policy until such time as Federal Council either repeals it or frames some other policy.

Photographs of the Ross Hull Memorial Trophy have been received by the Chairman and are to be suitably inscribed and sent to the previous winners. A letter will be forwarded to each winner before his copy is sent. Those who receive these very fine photographs will certainly congratulate Federal Executive on their foresight when they agreed to a request from the Contest Committee for permission to have them done.

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FEDERAL QSL BUREAU

RAY JONES, VK3RJ, MANAGER

Tom Laidler, VK5TL, Postmaster at Alice Springs, N.T., advises that he will try and get on 14060 Kc. c.w. twice daily for the benefit of overseas stations desiring the contact with Northern Territory for the W.A.V.K.C.A. Award. Tom will get on at 0900 and 2100 G.M.T. All contacts will receive a QSL via the Bureau.

VK5TL will appear on 50 Mc. as soon as he constructs a tx for that band. He is still in the building process.

Interesting cards sighted during November are YA1AM, of Kabul, Afghanistan; FY7YE, of Cayenne; French Guiana, and AC4YN, of Tibet. The latter card confirmed a QSO with Trev. VK2NS on 27th August, 1949!

Eskil Eriksson, SM4AWC/MM aboard M.S. "Mangarella" would appreciate a visit from any local Amateurs while his ship is in various VK ports. He recently was at Melbourne, Adelaide, Port Pirie and Burnie. The ship runs between VK and the West Coast of U.S.A. Eskil operates 14 Mc. c.w. during the voyages. His QSL shows a nice picture of the ship.

Mick Russell-Clarke (ex-VK4IC, of Willis Island, and now resident in VK2 land) advises that he hopes to have his QSLs ready for distribution in the near future. During his sojourn of 12 months at Willis Island (400 miles East of Cairns), Mick kept VK4IC on the air almost daily, using c.w. and phone.

Any VK who worked VP8AZ and did not obtain his QSL card, can apply again to Mike Faulkner, 13 Lovatt St., Newport, Pagnell, Bucks, England. VP8AZ operated from Graham Land, Antarctica.

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FEDERAL AWARDS

W.A.V.K.C.A. AWARD

Additional Certificate, No. 19, has been issued to J. P. Gruble, W7RT.

OFFICIAL COUNTRIES LIST

Elsewhere in this journal will be found the official countries list as at this date. The list is made up in alphabetical order of prefixes and zone numbers are also listed.

ADDITIONAL COUNTRY

Kermadec Island, a dependency of New Zealand, has been declared to be a new country, effective 1/11/55. It would appear that Laos, Cambodia and Viet Nam will be declared separate countries by the time this reaches the press.

—G. Weynton, VK3XU, Awards Manager.

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VICTORIA

STATE CONVENTION

Those who attended the State Convention at Bendigo had a very enjoyable week-end, some renewing old acquaintances, others making acquaintances with fellow Amateurs who up till that time had only been voices. Approximately fifty-three attended the Convention; this was not as large a crowd as usual and was a little disappointing for the organisers. After the dinner and the departure of the ladies to the pictures, the OMs got down to the business of the Convention.

There were six items on the agenda and these were apparently very fully discussed as they were still discussing item 3 at 11.30 p.m. when the ladies returned to rejoin them at supper. After supper a film from the Monsanto Chemical Co. on their latest developments in the chemical field was shown. This film was very, very interesting, but it was also very late by the time everyone got to bed.

However, a State Convention only comes once a year. Those who slept at the hotel got a good night's rest, but those who camped at that very picturesque park, "White Hills," know exactly what sort of a noise a peacock makes all night long.

The first item on the programme on Sunday was a hidden tx hunt on 2 metres. For some of the competitors this provided a scenic tour of Bendigo over mine shafts and "molecule" heaps as someone's harmonic aptly named those heaps of rubble to be seen everywhere around Bendigo. The tx was finally located by Laurie 3ALY at Lightning Hill, near Eaglehawk. Those who located the tx there were rewarded for their efforts by a wonderful panorama of the Bendigo district which could be viewed from a lookout at Lightning Hill.

Then followed another tx hunt, this time on 80 metres. This was a really difficult hunt. After traversing mere bush tracks in heavily wooded country, the tx was located firstly by Don 3ALQ deep in the scrub in the vicinity of One Tree Hill, nearly an hour after the signal had come on the air. While these hunts were being run, a bush tour of Bendigo, as alternative entertainment, was enjoyed by others.

After lunch all gathered at the White Hills Gardens where there were events for all. Two frequency guessing competitions were won by Bill 3AMH and Associate George Robertson, a nail driving competition for ladies was the next on the programme and this was won by Marj (Mrs. 3ALY), followed by a "stepping out a cricket pitch" which was won by Alma (Mrs. 3AMH), and a treasure hunt for the chidlren, won by the President 3TF's harmonic, John.

A grand week-end altogether, we thoroughly enjoyed every moment of it, our only regret was that there were not more there to enjoy it with us and reward Neville 3ACN for his colossal job in organising the Convention, and Pat, his fiancee, who was a charming little hostess to the ladies.

GENERAL ITEMS

The A.O.C.P. Class got away to a good start with twenty-two pupils attending on the first night, however there are still a few vacancies for anyone desiring to do the course. Yours truly joined in the struggle once again, pretty tough on poor old "teach" though, he has to leave out most of his appropriate little stories with a female in the class.

The best item of news for the month was the announcement of the engagement of life member and councillor, Jack Duncan, 3VZ, to Miss Phyl Mumme. They plan to marry early in the New Year. Congratulations and best wishes are extended to you both, Jack and Phyl. (Looks as though this Fox has been running with the hounds.—Ed.)

Calling CQ at State Convention (Bendigo). Left to right: 3AFJ, 3AKW, 3ACN, 3ZS, 3AWC, 3ATK.

For the holiday week-end at the end of January, a group of Amateurs and their families are going to Portarlington to enjoy camping, Amateur Radio, the seaside and perhaps a little fishing. If you are interested in these things, come along and join us. For further particulars get in touch with Mrs. 3LN (**FU 6239**).

The Institute activities wound up for 1955 with a family night in a real Xmas spirit. This was in place of the general meeting and OMs, XYLs and harmonics enjoyed a very excellent selection of films. The children all received a Xmas novelty and supper was enjoyed by all. The President, Gordon 3TF, extended to members and their families, Xmas greetings and best wishes for the coming New Year.

SOUTH WESTERN ZONE CONVENTION

The activities this month have been very numerous with the Convention held in Colac on 12th and 13th November. Several chaps worked mobile coming down, but conditions did not favour 40 or 80 mx. 144 Mc .was extra good as Tony 3ZAZ and his XYL were transmitting whilst mobile to 3AGV in Colac, although Pauline had to do all the driving.

On arrival we were greeted at 3AGV's QTH and received hotel bookings for the evenings, or should I say mornings' sleep, as that is how it usually turns out, as John 3AGD and Kevin 3AKR will agree.

Those present at the dinner were as follows: Bob 3IC, Harry 3XI, Tony 3ZAZ and XYL Pauline, John 3AGD, Gordon 3AGV, Brian 3ZBS, Mart 3AKU, Ed 3AEH, Bill 3AWZ, Ron 3KX, Dud 3KJ, 3AXU, Leigh 3II, Reg 3APR, Bill Wines and Jack 3ALP. We were very fortunate in having as our guest W1DKC, Earl Whiddon, from Boston, Mass., U.S.A.

The Convention was officially opened at the dinner by His Worship the Mayor of Colac, Cr. D. Stalker, 3KJ. We trust that this event may tend to increase public interest in the affairs of Amateur Radio.

The M.C. at the dinner was Chris 3AXU who has not been in the zone a great time, but did an excellent job along with Gordon 3AGV who had all the responsibilities.

After the dinner, Chris 3AXU brought the tape recorder with him and we heard a very good lecture by Dr. Grote Reber on Radio Astronomology, which was most interesting. Following this we had another lecture on the tape, this was on Atomic Energy by Professor Baxter, which also was most interesting.

After the conclusion of these lectures, 3II had his projector and he presented a few films including the beautiful coronation film. Leigh, you had better bring it to the Warrnambool Convention in March.

Supper was served later in the evening in the hotel dining room. After supper, we migrated to our rooms for some shut eye, but room 12 did not go QRT until about 2.30 a.m. as Harry 3XI, Bill Wines, John 3AGD, Tony 3ZAZ started to re-build a modulator of a Type 3 while awaiting the late arrival of Kevin 3AKR, who was working mobile on his way down from Westmere. He arrived at 12.45 a.m. and took over the modulator building.

Sunday morning we started off early by assisting the Colac Amateurs at 9 a.m. Following this there was a 144 Mc. hidden tx hunt, which was won by 3AGD from 3ALY, who is the king of the fox hunts in Melbourne; still the country lads are not too bad.

At 11.30 a.m., as conditions were not very good for the W.I.A. broadcast, 3AXU took us out and showed us through 3CS' new 1kw. tx using 833s in the final; after this we returned to the hotel for lunch.

Several members who were unable to be present at the dinner on Saturday were at the hotel for lunch. They worked mobile on the way down. Bert 3VA from Ballarat, Don 3PO and a few others.

At 2 p.m. we started from the hotel to find the hidden tx which was on 3.5 Mc. band. This was won by Ed 3AEH. After this, there was a scramble, lasting one hour. This was won by Kevin 3AKR, working 16 stations on the Wyndom. At 4 p.m. the XYLs of all the Colac Amateurs turned on afternoon tea. Congrats, ladies, on a very good job and we all thank you most sincerely.

Earl W1DKC brought his Harvey Wells tx up from the boat. It is a beautiful piece of equipment covering all bands, including 144 Mc. with an 807 in the final; many thanks, Earl. May we take this opportunity of wishing you all the very best while in Australia.

This concluded a very enjoyable Convention, the success of which was due to Gordon 3AGV, who has had a very busy time. We hope we get as many members at the Convention in Warrnambool some time in March.

EASTERN ZONE

Gwen 3US and Rex 3VL have a new junior op. The Zone members congratulate and send best wishes to you both. Bert 3BB came on the Sunday hook-up on 6th November with a very strong signal after an absence of some weeks. 3AAV putting out a good quality signal of his own, complains about its terrific power. Gilbert 3AYM has joined the hook-up with his newly acquired call and rig. Bill 3TY, at Sale, is working the zone boys on 2 mx at last.

The Latrobe Valley Radio and TV Club is going strong, holding monthly meetings with good attendances. The East Gippsland Society enjoyed an educational film show at Stratford at their last meeting. Next meeting will be at Alf Mackrell's place, Darriman.

3SS-3DY headquarters now have a call sign VL3TP, and Cliff Traill is VL3DF over near Sale. Freq. 2692 Kc. Both are base stations for the rural fire brigade trucks in the area. David 3DY is busy modifying the mobile rig to be fitted into them. 3AAV is making up mobile equipment also. Keith 3SS spent two weeks in hospital after losing an appendix. This will hold up journeys up the tower to put on the 2 mx beam. George Francis has passed his limited exam and is awaiting his call sign.

NORTH-EASTERN ZONE

Jim 3JK has been modifying his p.p. 809 modulator, and Jack 3AKC is active. However, nothing has been heard recently of the tx construction project of Ron 3AQG and the help from Henry 3HP. Frank 3ZU is moving into a new flat in Yarrawonga, not far from Kevin 3IR. The opportunity of hearing of Ken Mercer was missed. The news of the month is that Col 3WQ has been promoted to Ormond, and it is hoped that the metropolitan area capitalises suitably on our loss. George 3GD has been heard on 40 mx, and Tom's (3TS) beam tower and antennae are quite a landmark over Corop way, but nothing has been heard of Stan 3AGT in Tongala.

Les 3ALE has been kept busy helping the XYL with the new harmonic, mentioned last month. Bruce 3AGG is in strife with his 20 mx transmissions and the local taxi service on 83 Mc., however Brian 3ASF is doing well on that band. Murray 3HZ and Alex 3AT are kept too busy for Amateur Radio, but Ted 3AOB has been installing double conversion on his BC348 with very pleasing results. We are pleased to welcome to the zone Ray 3FI, coming to Radio Australia from 3WV. Our Secretary, Earle Scones, has been out of the news lately. Ken's (3KR) interesting DX in November is 3W8AA in Hanoi. Howard 3YV, Hugh 3AHF and Bill 3JP were seen at the Gliding Club Pageant at Benalla. Jack 3PF is well occupied with his sheep these days.

3SM, who was at Alexandra a while back, spent a recent holiday at Springhurst. Vern 3AXW is quite active. Norm McDougall is now receiving "A.R.," Jack Dunne has applied for Associate membership, and Jack Laughton is making enquiries re A.O.C.P. qualifications. Syd 3CI and Alan 3UI are very interested in the v.h.f. field days. It is understood that Keith 3JC will be with them, if the house-building permits. Peter 3APF is active on 6 mx. Johnny 3ACK is active on 40 and 20 mx. By the time these notes appear quite a few of us will be listening for Doug, who will then be VK1IJ, from Macquarie Island. At least for the summer season it is anticipated that the North Eastern Zone hook-up will be operating on 7050 Kc. at 1330 hours local time and all members on phone or c.w. are welcome.

GEELONG AMATEUR RADIO CLUB

Club members have been treated to a wide range of interesting events this month. Firstly, Ted 3AEH conducted members over his place of work and explained the intricacies of electronic timing equipment. Our thanks go to Ted for an interesting evening.

The Colac Convention was well attended by local enthusiasts and we must thank Chris 3AXU and Gordon 3AGV for their usual hospitality. The champion won the 80 mx hunt again, that is 3AEH.

The club's tx was taken out by Bob 3IC and Jim 3ZBR to Lovely Banks for a field night and the first man in was Kevin Mills, closely followed by Ted 3AEH. Vic Clarke was in close attendance.

Another interesting evening was given by John Mitchell and his XYL. John took us through Central Australia with 35 mm. coloured slides and the boys made suitable comments as the talk proceeded, on the probability of good radio QTHs. An excellent supper concluded a most happy evening and we thank our hosts warmly.

Arrangements are in hand for the Xmas Party when the harmonics will really let their hair down. We wish all the compliments of the season.

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QUEENSLAND

BRISBANE DISTRICT

With Santa Claus back at his workshop preparing for next Christmas, here again are your budding journalists to give you a short precis of what has been going on over the last month. From what the clued-up scientific types predict, 1956 should be the beginning of another period of mighty conditions on the h.f. bands a la 1946-1950. Old "Sol" is in the process of getting himself his normal eleven yearly batch of chicken pox and let's hope that some of the fever (DX chasing type) infects the Amateur population. Let's hope, also, that the sunspots will help to build up the membership of the W.I.A. again, especially in the VK4 Division. Joking aside, all the very best wishes to you from your Divisional Council and may 1956 bring you everything you wish in Amateur Radio and in your everyday life.

Now to get on with the "doings." Arthur 4PX has re-affiliated with the W.I.A. and it was really good to see "Snowy" at a general meeting again. Arthur is active on the bands, especially on 21 Mc. Another old member to come back into the fold is Bert 4AO. Bert is knocking over bags of DX and is in the midst of a building programme. He personally built himself a beautiful house and if his new rig is up to the same standard, look out for another W1FH in our midst. Bill 4YA has shown encouraging progress in health and is now permanently in Ipswich. The Ipswich gang have rallied around and let's hope the old familiar voice will be heard on the bands shortly.

Del 4RJ is back on the air and, after experiments with beams has settled for a vertical. Del has one of the most unique earthing systems in VK—when he can't get correct loading, he tips a bucket of water out the window and his final current rises by 30 or 40 mills. Mick 4MD has rejoined the W.I.A. and it will be good to hear something from Kangaroo Point other than noises of shipbuilding and the scramble for counter lunches at the "local milk bar." Come on soon, Mick.

Numerous inquiries have been made regarding Morse Classes in Brisbane and if there is anyone who would like to take on classes and give instructions to prospective Amateurs and others, please contact the Secretary. We can assure any instructor that classes will be well attended. Harold 4HB is in a new QTH at Aspley with a spacious Hacienda, acres of land, and a nice rig and beam. A recent visit to his QTH by some of the gang saw Tibby 4HR, VK4's top DX man, climbing up Harold's beam tower with the ease of a kid on a bird nesting hunt. Your scribes have been trying to get 4PA to become active and it looks like the New Year will see activity by "a technician over whom a local broadcast station has no control." Why don't you tune the b.c. rig up on 14 Mc., Al?

Well, there you have it for this month. Don't forget the first general meeting for 1956 will be at the usual place on the fourth Friday of January. Let's see a good roll up to start the year on the right footing. All the best to you all from 4ZM and 4PR.

MARYBOROUGH

4CB building a new exciter unit, including Geloso v.f.o. to fit into his rack. Painting the new home keeping him off the air. The steel tower is still in pieces. 4AI also started a new exciter. How about a v.f.o. this time Alan? At present chasing bugs out of his xtal controlled rig. 4BG threw away the Gamma Match to his 14 Mc. beam, put in quarter wave matching section to 300 ohm line and is delighted with DX results, even though beam only 18 ft. high at present. 4GH contemplating more house alterations before coming back on air. —4BG.

TOWNSVILLE

A well attended meeting of the T.A.R.C. was held as usual at the residence of Graham 4BX. After the usual correspondence was finished, the meeting was open for general business. Alan 4PS and Joe 4JH opened up the discussion on a 144 Mc. link for North Queensland and suggested that it would be possible to have a link from Maruba in the north to Brisbane in the south, along the coastal route. The longest distance to be covered would be Ayr to Mackay and Sarina to Rockhampton, which could be quite feasible even with low power. It was decided that at the next meeting plans would be formed to implement same, and suitable circuits be approved including transmitter, modulator, and converter suitable for emergency use if required.

Meeting adjourned to give ample time to Mr. G. Baines to give a lecture on his conquest of Mt. Victoria in New Guinea and his film on same was very good, shots were in technicolor and the best that I have seen of the natives, especially in their headdress of Bird of Paradise plumes. After a hearty vote of thanks to George for his address and film, all partook of the usual light refreshments.

Congratulations to Norm, protege of Andy 4BW, on passing the recent A.O.C.P.; won't be long before he is using the same black crow to herald his station on the air. Alan 4PS and Joe 4JH now gathering all necessary bits and pieces to get all the chaps on the air on 144 Mc., good work boys. Frank 4FC, Ingham, worked 7 Mc. with quite hefty sig. John 4DK installed new modulator and certainly fills the carrier, even when choked back. 4EJ had a day in bed after his visit to Ingham and then went to Magnetic Island for week-end to recuperate. Vern 4LK going great guns on 50 Mc. and giving this band a hiding.

Very few Townsville boys on the air at present. May be a lull before a storm of activity. Met Jack 2AAX in town and promised to call next time ship is in port. Worked a new one, AC5PN, after he had worked VK2 and 4HR, and missed out on his QTH due to a VU2 in India calling him frantically on the freq. before QSO had finished. Hope he is legit.—4RW.

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SOUTH AUSTRALIA

The general meeting was held on the 8th November at the usual stamping grounds in Waymouth Street. Half those present forgot to sign the attendance book, but the chairs were all occupied so the numbers must have been up to the usual. No visitor's signatures appeared in the book, but the members of the A.O.C.P. theory class came along to swell the ranks. John 5UL unfortunately had hurt his eye during "cracker" night celebrations and was unable to carry on with the lecture for that night.

Apologies having been received from quite a number of members for non-attendance, the Chairman then introduced the guest speaker, Mr. Ted McGrath. Ted, who is Divisional Engineer in the Radio Section of the P.M.G., spoke on the developments in communication engineering over the last 100 years, with particular reference to Australian conditions. Most of us are aware that Ted holds the call 5MO, and until recently was active on all bands. With the aid of well prepared diagrams and photographs, the progress from single earthed lines, single pair multiple circuit lines to double co-axial lines carrying 1600 channels was traced. The place of radio links in the Australian network was described and in particular those links which have been installed in South Australia and proved invaluable.

The Chairman then called upon Cliff 5CX to propose a vote of thanks to the lecturer, pointing out to members that Cliff had had considerable experience in the field whilst stationed at the McLaren Vale Exchange.

Business matters were at an all-time low and after correspondence had been received and new members accepted, the meeting was closed at 2155 hours, and the unofficial meeting began with members discussing their latest gear and DX exploits. As the official QSL Officer, George 5RX, was unable to attend owing to shift work, Dougal 5BY and Joe 5JO handled the distri-

bution of the cards. The new members were: Messrs. V. L. F. Schwinger (country associate), L. K. Earp (6ZAE), W. J. Howse (6ZAA), S. J. Stewart (6ZAS), full country members. Welcome back into the fold again Bill 5HR, who has been active on 288 Mc. lately. Another oldtimer, George 5GB, is with us again.

Round the city there is a revival of DX chasing with Reg 5QR pacing along with Jim 5FO for new countries. Even my rx and tx still work on 14 Mc. and my notes include John 5HI and Dougal 5BY who are always there when anything breaks. Now's your chance Dave to get 5DH round the world from that new QTH of yours; don't plan too long, or the sunspot cycle will be past its peak!

Brian 5FQ has been heard calling the rare ones too. I'll bet you find your new location somewhat of a paradise after your trials and tribulations elsewhere. Heard Les 5LC scooping in the signals with his cubical quad—or did the big blow remove it Les? What about the gen on it for the magazine?

Now when I get around to working rare ones —guess who—Luke 5LL, was very glad to know that the tranny was successful Luke. Shall be glad to have you in the "fone" team on the Picnic Day. We might even talk Pansy into joining us again, but Doc, you can't qualify for the phone this time, after winning the c.w. section of the R.D. Contest—"Hardly, sir, hardly! It wouldn't be cricket, sir." Which makes me wonder if it ever was, is, or ever shall be.

Ron 5MK has been somewhat seedy, but we hope that life is picking up again in time for the Ross Hull Contest. Albert 5ZL interested also in a Boys' Club at Brooklyn Park and with Howard 5XA and Joe 5JO, at the Brompton Boys' Club, staged a 288 Mc. demonstration. Many others assisted from outside with signals and it stimulated the interest of the lads and their parents. These are very valuable works that some of our members are doing and they are bringing credit to the Institute with their efforts. We also have Les 5AX interested in Scouting at Gawler. There are probably others, too, who are showing a lead to the young folk and do it whenever they can.

Have had some excellent contacts with the country chaps on Sunday mornings, but conditions are still poor for Fred 5MA at Renmark. Conditions can be excellent to all other parts of the State, but not in that direction; possibly could be the shadow of the hills, Fred. Even had a contact with Les 5UX at Cook; with Les on c.w. too! (5BY please note). Bob 5RI has been fair on occasions also. Reports coming in indicate that 80 mx transmissions from 5RR often get through when the 7 Mc. band is not open. Reg has been using a 6 mx link from 5WI and finds that he can modulate the 80 mx tx much better.

Rex 5DO has been running schedules to the Eastern State on 20 mx and Howard 5XA and Joe 5JO have had success with Tom 5TL, located at Alice Springs. 20 mx has the unfortunate habit of closing down like a trunk line call and leaves each end suspended like a fish out of water—that's just what happened on a recent Sunday morning with me waiting to have a word with Tom, but he sent us a batch of hot weather as a reminder!

Stuart 5MS called me to let me know that Bram 5ZAB (get it right this time Ed.) had passed his code exam and hoped to be busy on the h.f. bands with 5AB. Associate Carl is an associate no longer—congratulations to you both on your perseverance. Stuart has resurrected a 21 Mc. beam after the weather man had ruined his other one for him, but finds it works better off the back; what are you grizzling about, it works doesn't it? The R.D. Trophy should have been located at 5WC before you read this and Bruce 5OR has printed a small card to display with it.

EYRE'S PENINSULAR

Wally 5DF reports that Pat 5LT is once again active on 20 mx, having re-built tower and beam. This time located well away from any other wires belonging to the Public Services. The beam is a "ZL Special" with 5LT modifications. Reports show that it works from the back as well as from the front; however, the sides are null! Very little heard of Jack 5VJ these days, but he is still in Pt. Lincoln. Lack of signals rather suggests that business keeps him fully occupied. No reports from him about his v.h.f. ambitions and Xmas 1955 is very close. Associate Alf is studying for the A.O.C.P. and now has a s.w. rx with which he is doing quite a bit of listening—c.w. no doubt.

5DF usually around for a contact with 5WI on Sundays. However 50 cycles is bread and butter to Wally and family so 50 cycles it is for the rest of the week. Some 50 miles S.E. from Lincoln is an island called Wedge and on it is a "Ham" called Norm with the call of 5YM. There Norm lives with XYL and family and naturally enough Norm looks for contacts on 7 Mc. phone and c.w. in such a lonely outpost. Recently wife and three children have come into Lincoln so that the kiddies may attend school. Norm is now batching and has for company some 1200 sheep, a few cows and some 50 wild goats! So chaps, keep a look out for that call, 5YM. A trip to the island with a portable station by Wally was only successful from the "fish-feeding angle" as the tx refused to load.

Bert 5DR has decided that Cape Borda Lighthouse is a good place in spite of lightning strikes and other lesser inconveniences. He hopes to have power lines soon; maybe a mixed blessing Bert! You still have to hear them to work them. Hope that the 144 Mc. rig is coming on slowly, but steadily, for the Ross Hull Contest.

LOWER NORTH

Ern 5EN still has time to be active; glad you have seen the motto, "DX before Dishes." Main thing is to keep it hidden from the XYL. Very nice score you put up for the R.D. Contest, it should be possible to display the Trophy there later on after it has been across to Lincoln and if you can arrange same. 5AP also active and heard here on 40 mx. Had a brief but pleasant contact with Brian 5CO a Sunday or so ago. Austin 5WO at Laura manages to pop up occasionally. Compson 5EF at Gawler usually listening on 40 mx or 2 mx relay from Keith 5MT. Comps doing a bit of construction on beams, remote controls and other technically intricate schemes. What about drawing that amazing diplexer for "A.R."?

SOUTH EAST

Stuart reports that the monthly meeting was sparsely attended, but a very interesting night was had by those who visited the new A.B.C. station, 5MG. This station is fully automatic and seems to do about everything but find its own faults. The B.B.S.S. does even that, doesn't it Warwick?

Erg 5KU was absent from the meeting; has been on the sick list for a few weeks. Claude 5CA been in hospital having an operation. Hope you both are well when you read this. Les 5ZAG still trying to contact Hynam on the v.h.f's., but to date not much success. Stuart finished his 21 Mc. converter and trying it out on the aforementioned beam; has less time now that he has changed his occupation; don't tell me you've taken up teaching Stuart! No, oh well, I thought I might be able to do a swap. John 5FD and Col 5CJ no speaka da English these days; where have you been boys?

And now from the President and Council, all the best for 1956 chaps, may it bring bigger and better beams, converters and DX. 1955 has been a good year for this Division, let us make 1956 a record for membership, attendances—and not the least, for articles in "Amateur Radio." Sincere thanks to those sub-sub-editors in our country centres who have faithfully sent in notes.

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WESTERN AUSTRALIA

The usual monthly meeting was held in the Technical College Annexe during November. Business was brief. A letter from the Divisional Secretary (Jack Mead) was read giving notice that he intended to resign as he expected to go on long service leave next year. Any aspirants for the Divisional typewriter please contact Jack. Signals were presented from VK7 (re protest against rules of Ross Hull Contest) and F.E. (re the granting of Amateur Television licenses).

The contest officer reported that the closing date for lodging of logs for the Week-end Mail Contest had been extended. Results of this contest have since come to hand, and first place was gained by 6RU, who worked no less than 122 countries during the month of the contest. Runner-up was Jack 6EJ, who worked 65 countries. Nice work, Jim and Jack.

After the closing of the meeting, members adjourned to see some films presented by Mr. M. Crabbe, publicity officer of one of the local oil companies. These showed various aspects of oil search, both on land, in many different parts of the world, and on the sea floor. The final film was a cartoon showing something of the technical side of oil search—rock formations likely to bear oil and testing methods, etc. Our thanks go to Mr. Crabbe for an extremely interesting meeting.

Skipper 6WS has had a birthday recently, his 83rd, I believe. Heard him telling a ZL about it. Congratulations Skipper and many more of them! Jack 6EJ tells me that during the course of his DX working, he has been experimenting with low power. He succeeded in working VP9 and G land with 1 watt input. A new full license has appeared on 40—Jim 6JH, of Geraldton. He has been making regular Sunday afternoon appearances. Glad to hear you around, Jim. Another new license (limited) is Tom, of Brunswick. Tom is a stayer, he passed at his sixth attempt. Congratulations OM. Tom is having a go at the morse next time and expects to pass.

Your scribe and Wally 6ZAA recently visited Albany with the expressed intention of contacting Perth on 2 mx. Quite a collection of Albany Amateurs were present in 6WG's shack: 6LT, 6KJ, 6WG, and 6WZ (complete with tape recorder). Harry 6WZ is still house hunting—so far without success.

Bernie's (6KJ) garden looks quite impressive with three four-section 8JKs and an 80 mx dipole.

The 40 mx Scramble was fairly successful, apparently. A post mortem set the number of participants at 26. Results are still being awaited.—6BE.

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TASMANIA

Well chaps, another Christmas has passed, and I trust that it was a very happy one for all concerned. The time lag between writing and printing caught me out, and, too late I realised my omission to extend greetings. However, as I write these notes, in November, I can avoid a repetition, and I take the opportunity now of extending to you, one and all, my very best wishes for the New Year. May 1956 bring you all that you would wish yourselves.

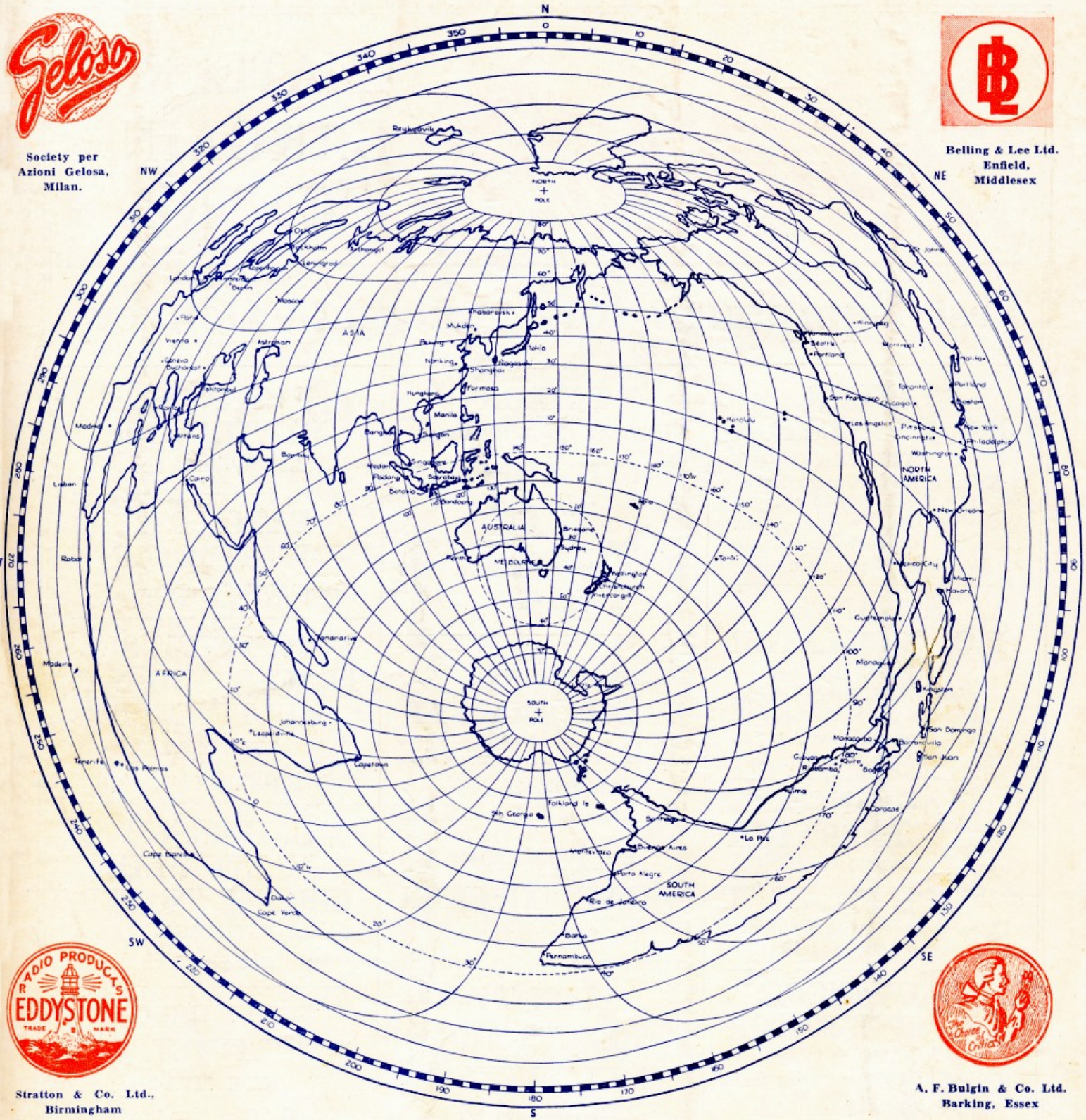
The 2 mx field day, held on 20th Nov. proved a most successful event, with the honours going to Dave 7DH. The tx was hidden at Blackman's Bay, and quite a good crowd rolled up, although a certain select band (all with the same excuse) arrived a little later on. Hohum. That old reflective mood. The Perpetual Trophy has now passed into the custody of Ted 7FJ, and doubtless it will take pride of place in his lounge room.

The Noise Investigation Service is still active and recently Len 7LE and Harry Melling, of the Wireless Branch, visited 7RX in another attempt to locate the interference. Yes, you have guessed it, the noise was conspicuous by its absence. Better luck next time chaps.

By now 7LS will have moved to his new QTH at Wynyard, and since the rig was the last thing to be packed prior to moving, there is a fair chance that it was one of the first cases opened at Wynyard. Hope the move went smoothly Len. Leon 7JP is now at Queenstown. Let's hear from you Leon. Harry 7HB has just had a most unfortunate accident with some acid and is in hospital. May we express a most fervent hope Harry that when this appears in print you will read it with sight completely unimpaired.

News of Doug 7DZ reveals that he has visited Italy, Spain, and Germany, and is now in London. Doug hopes to visit the U.S. before returning home and he is most impressed with the hospitality extended everywhere he has been. Max 7CA has found that upward modulation on the speedo needle is a costly business. Better fit a de-compressor on that accelerator Max. Tom 7SW also recently had an interesting QSO with the 80 Mc. equipped gentry in the early hours of the morning, and evasive action was taken, but they established contact. It would appear, fortunately, that they are not going to QSL.

If you know of a QTH which is t.v.i. and b.c.i. proof, and gives guaranteed DX with an inside antenna, would you please contact Ted 7FJ. Heard Island and offers over five figures will not be considered, and the house should have a suitable window for displaying the Perpetual Trophy. To sum up, Ted has sold his present QTH and is looking for another one. 7LE advises that 2 mx still has a following, and quite good mobile contacts were achieved recently with 7AJ and 7DH. Alan 7CJ is steadily re-assembling the rig up North (not the 10kw. one), and I have an idea that something will be doing in the near future. Hurry up, Alan, there is still room for one more. Also heard Fred 7FC active on 40 mx. Once again, in closing—All the Best for 1956.



This Great Circle Bearing Map of the World is another service to Amateur Radio Operators from R. H. Cunningham Pty. Ltd.

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SCALE IN MILES

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